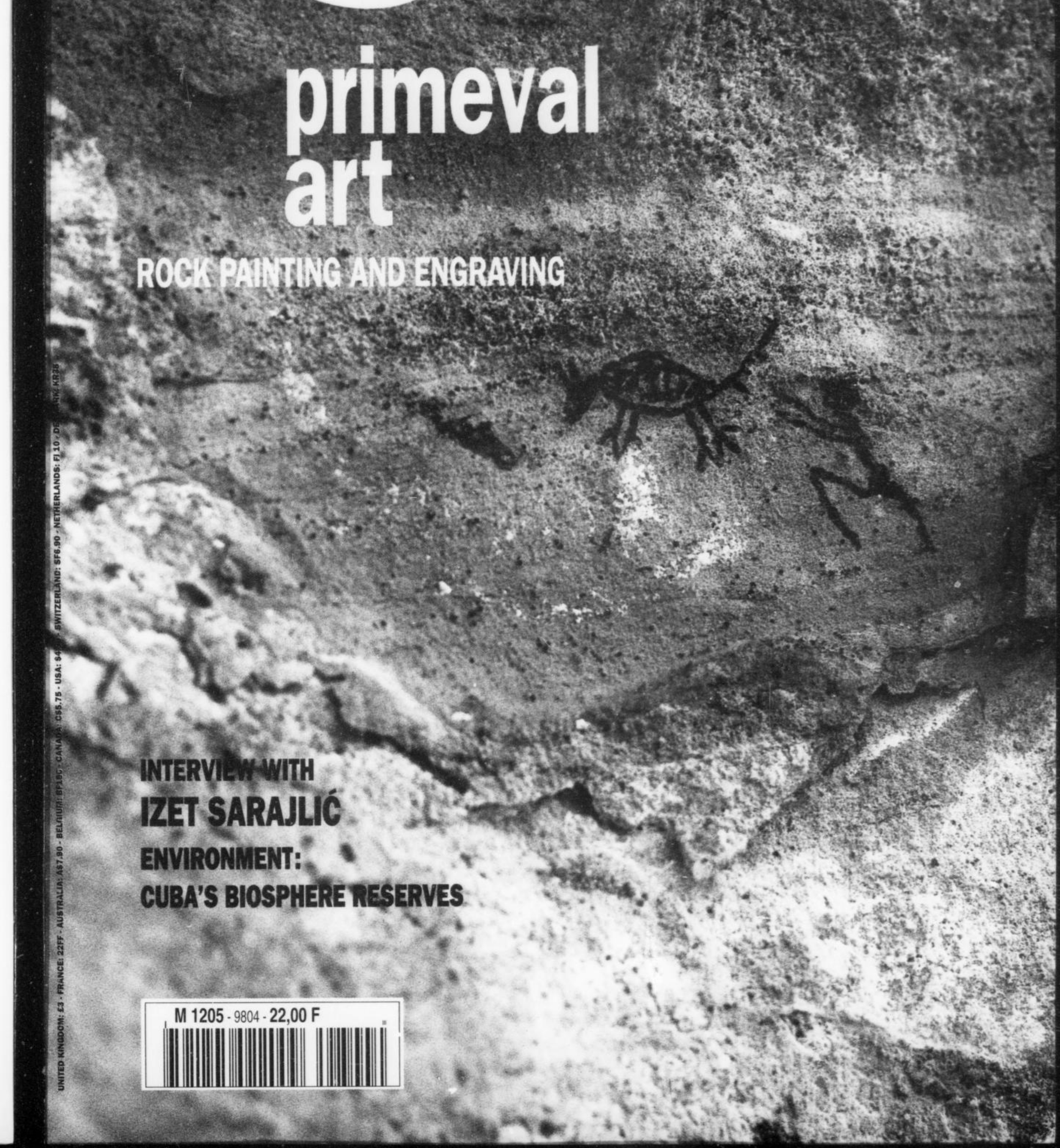
APRIL 1998

THE UNESCO COURIER

primeval art

ROCK PAINTING AND ENGRAVING



INTERVIEW WITH
IZET SARAJLIĆ

ENVIRONMENT:
CUBA'S BIOSPHERE RESERVES

UNITED KINGDOM: £3 - FRANCE: 22FF - AUSTRALIA: A$7,80 - BELGIUM: BF185 - CANADA: C$5.75 - USA: $4 - SWITZERLAND: SF6.90 - NETHERLANDS: Fl 10 - D

M 1205 - 9804 - 22,00 F

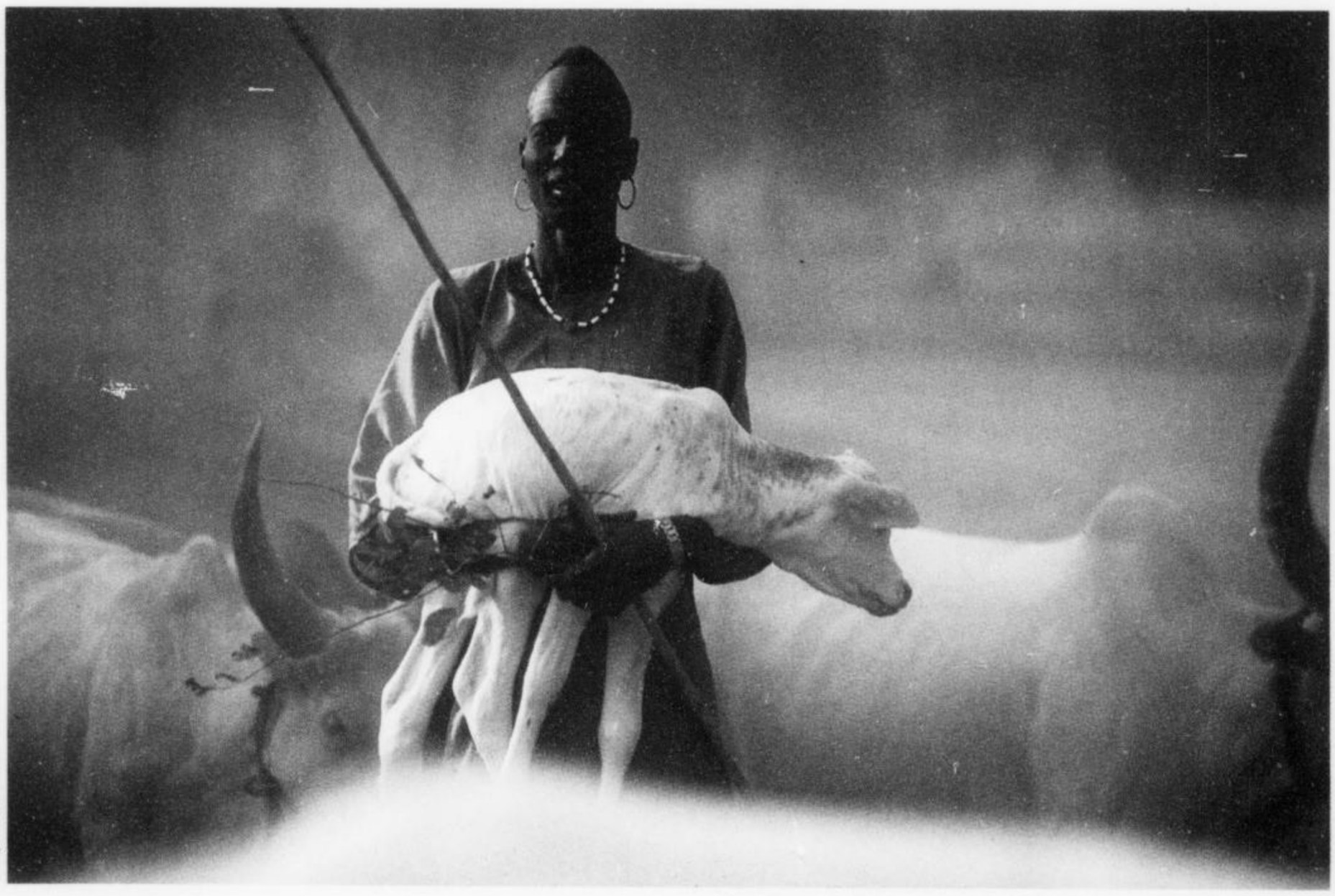
THE UNESCO COURIER **Nikon**

INTERNATIONAL PHOTO COMPETITION
PEACE IN EVERYDAY LIFE

A selection of photos entered in the competition will be featured on this page in forthcoming issues.

Playground, Magadan (Russia). Photo by Jim Hodson (United Kingdom).

© Jim Hodson, London



© Roger Job, Brussells

A Dinka herdsman (Sudan) with a newborn calf. Photo by Roger Job (Belgium).

THE UNESCO COURIER

contents

APRIL 1998

primeval art

ROCK PAINTING AND ENGRAVING

© Christophe Chiclet, Paris

INTERVIEW

48

Izet Sarajlić

The hopes and fears of a noted Bosnian poet.

The first stirrings of creation **4**
by Robert G. Bednarik

The writing on the wall **11**
40,000 years of *Homo intellectualis*
by Emmanuel Anati

The prehistoric imagination **17**
by Denis Vialou

'For Australian Aborigines, rock painting is a title to their land' **22**
Interview

The shaman's journey **24**
by Jean Clottes

An endangered art **29**
by François Soleilhavoup

An open-air museum in the Sahara **32**
by Axel and Anne-Michelle Van Albada

Rock art of sub-Saharan Africa: a thumbnail guide **36**
by Osaga Odak

Fact file **38**

Consultant: *François Soleilhavoup*

Commentary **Federico Mayor** **40**

GREENWATCH **Cuba's biosphere reserves** *by France Bequette* **42**

ANNIVERSARY **Elijah ben Solomon Zalman, the *gaon* of Vilna** *by Henri Minczeles* **45**

LISTENING **It's rumba time!** *by Isabelle Leymarie* **46**

AUTHORS **50**

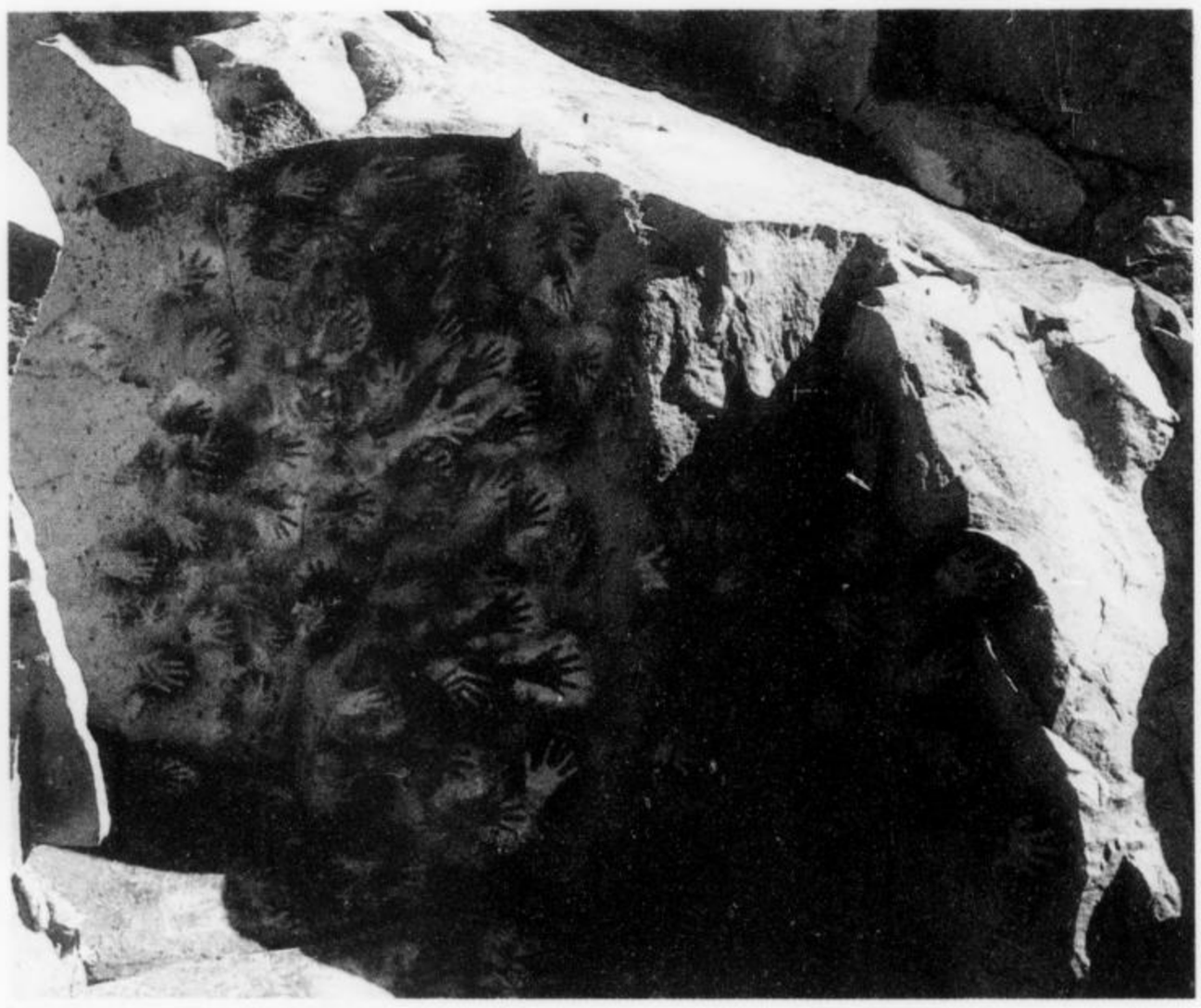
Cover:
Hunting an armadillo. A rock painting at Pedro Furâda, Serra Capivara, Piauí state (Brazil).

© All rights reserved

The first stirrings of creation

BY ROBERT G. BEDNARIK

Rock art, found in almost all the world's regions, is a mine of information about early man's intellectual development



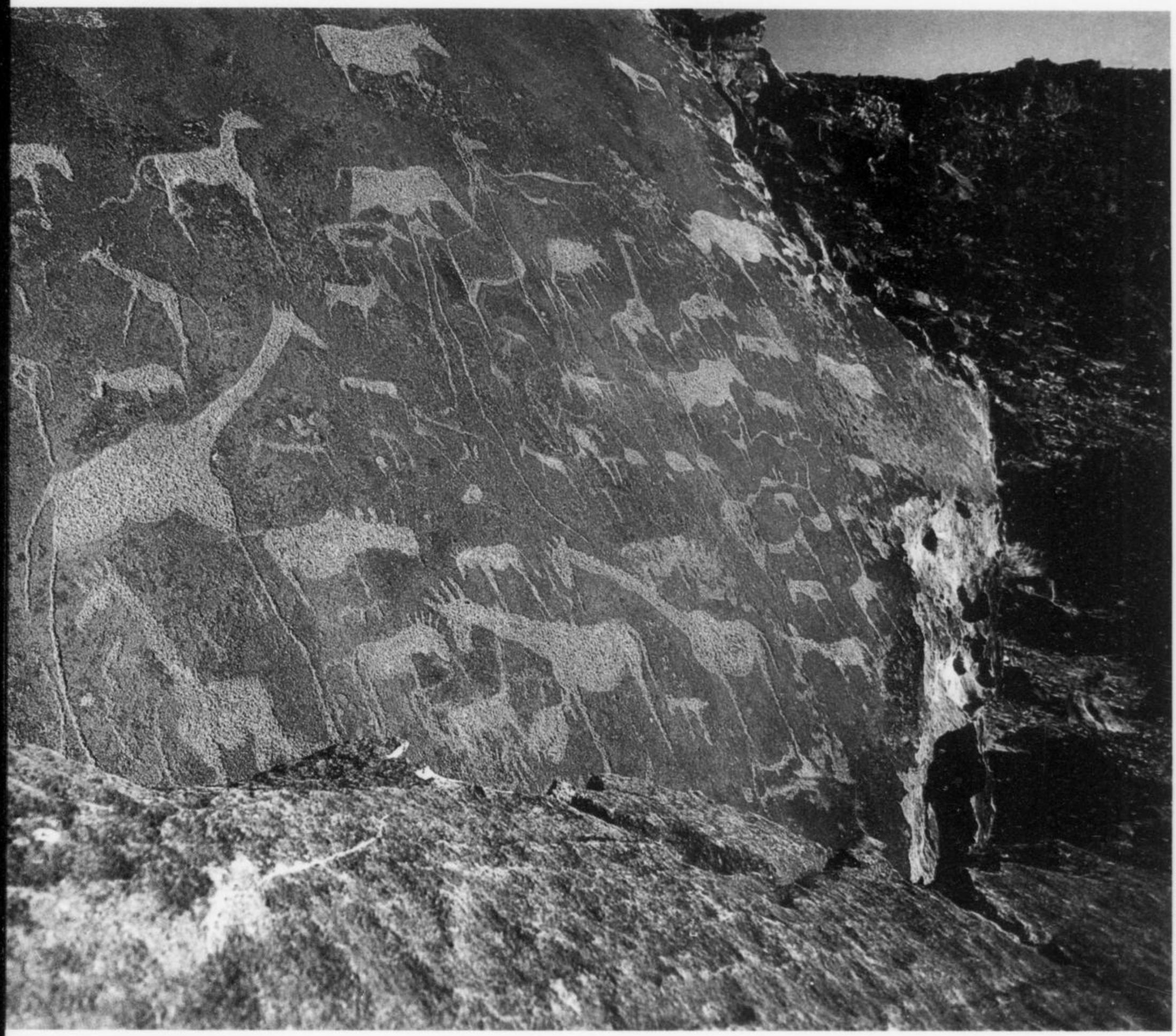
© 1997 by WARA, Centro Camuno di Studi Preistorici, Capo di Ponte, Italy

Handprints in a rock shelter at Rio Pinturas in Argentina's Chubut province.

Prehistoric rock art is by far the largest body of evidence we have of humanity's artistic, cognitive and cultural beginnings. It is found in most countries of the world, from the tropics to the Arctic regions, in sites ranging from deep caves to high mountains. Many tens of millions of rock art figures or motifs have been found, and more are being discovered each year. This massive, semi-permanent and cumulative record is the most direct evidence we have of how pre-humans first became human and then evolved complex social systems.

Some widely held misconceptions about the origins of art must be dispelled at the outset. Art as such did not appear suddenly, but developed gradually with the cognitive evolution of humans. By the time that the famous cave art of France and Spain was being produced, art traditions are thought to have been well established at least in southern Africa, the Levant, eastern Europe, India and Australia, and no doubt in many other regions that have yet to be examined adequately.

When were humans first able to produce abstractions of reality? In addition to its interest for the art historian and the archaeologist, this question is of wider concern, if only because ideas of cultural precedence have been effective in shaping racial, ethnic and national value judgments and even fantasies. The notion that art began in the caves of western Europe furthers myths of European cultural precedence, for example. Secondly, the origins of art



© Stanislas Fautré/Ask Images, Paris

Rock carvings at an open-air site at Twyfelfontein, Namibia.

are thought to be intimately intertwined with the emergence of several other distinctively human faculties: the ability to form abstract concepts, to symbolize, to communicate at an advanced level, to develop a notion of the self. Apart from prehistoric art we have no tangible evidence from which to infer these capacities.

The beginnings of art

Art production was preceded by "non-utilitarian" behaviour patterns, i.e. behaviour that seems to lack practical purpose. The earliest discernible archaeological evidence for this is the use of ochre or haematite, a red mineral pigment collected and used by people several hundred thousand years ago. These early humans also collected crystals and petrified fossils, and colourful or oddly shaped pebbles. They had begun to distinguish between ordinary, everyday objects and the unusual, the exotic. Presumably they had developed concepts of a world in which objects could be categorized into different classes. Evidence of this appears first in southern Africa, then in Asia and finally in Europe.

The oldest known rock art was produced in India two or three hundred thousand years ago. It consists of cup marks and a meandering line hammered into the rock of a sandstone cave. At about the same time, simple line markings were made on a variety of portable objects (bone, teeth, ivory and stone) which have been found at the camp sites of early humans. Sets of bunched engraved lines ▸

© Robert Bednarik, Melbourne, Australia

Stylized animal figure at Helanshan, Ningxia (China).

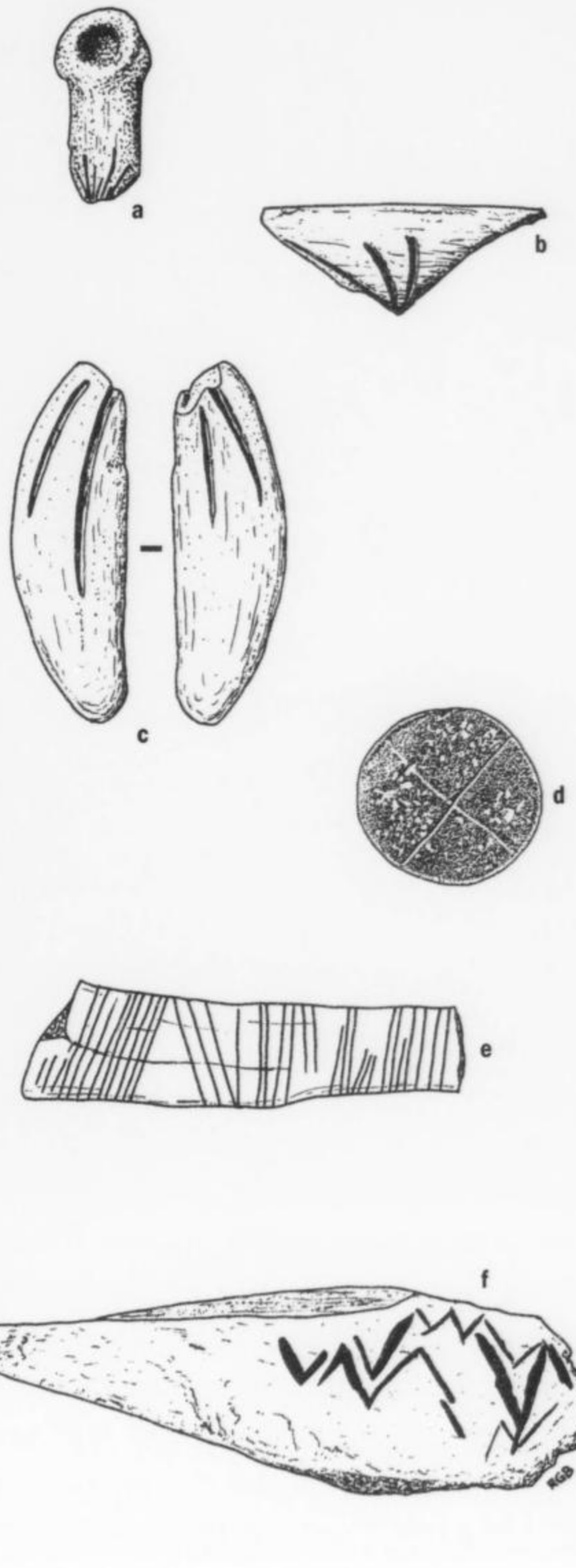
first appear in central and eastern Europe; they developed into distinctive arrangements that can be recognized as motifs such as zigzags, crosses, arcs and sets of parallel lines.

This phase, which archaeologists call the Middle Palaeolithic (perhaps 35,000 to 150,000 years ago), is crucial in human intellectual and cognitive development. This was also the time when people developed seafaring capacity, and crossings of up to 180 km were eventually made by colonizing parties. Regular ocean navigation clearly required an advanced system of communication, presumably language.

People of this period also mined ochre and flint in several world regions. They began building large communal dwellings of mammoth bones in southern Russia, and erected stone walls in caves. But most importantly, they produced art. In Australia, some specimens of rock art may be up to 60,000 years old, as old as human occupation of the continent itself, and hundreds of sites contain examples which are thought to predate the cave art of western Europe. But during this phase rock art also appears in Europe, the oldest known example being an arrangement of eighteen cup marks in a French cave, on a rock slab placed over a child's burial spot.

Perhaps the most interesting aspect of this period is the cultural uniformity that prevailed throughout the then-settled world. Despite differences in tools, doubtless due to responses to environmental differences, cultural behaviour was surprisingly consistent. The use of ochre and the fairly uniform repertoire of geometric markings are indications of a universal artistic language among archaic *Homo sapiens*, including the Neanderthal people of Europe and others about whom we know from fossil remains.

Figurative depiction in the round (sculpture) first appears in Israel (c. 250-300,000 years ago), as modified natural form, then in Siberia and central Europe (c. 30-35,000 years ago), and later in western Europe. By 30,000 or so years ago, rock art included complex finger markings on soft cave surfaces in Australia and in Europe, and hand stencils in France. Finally, two-dimensional pictures of objects began to



Examples of early rock art, dating back to the Middle Palaeolithic (35,000-150,000 years ago). Object (c) is a tooth, (d) is a fossil nummulite, and the rest are bone fragments. The finds are from Ukraine (a-c), Hungary (d), France (e) and Bulgaria (f).

© Robert Bednarik, Melbourne, Australia

appear; the oldest examples, about 32,000 years old, are from France, followed by paintings from Namibia in southern Africa.

By about 20,000 years ago, quite recent in terms of human history, cultures began to diverge noticeably. In western Europe, Upper Palaeolithic people developed sophisticated traditions of both sculpted and graphic art for ritual or decorative use. By 15,000 years ago, this tradition produced glorious masterworks in such caves as Altamira (Spain) and Lascaux (France), and thousands of finely carved figurines made of stone, ivory, bone, clay or other materials. This is the time of the finest polychromatic cave art, painted or engraved with the confident strokes of master artists. Graphic art traditions elsewhere, however, developed very differently. In Russia and across Asia, geometric art forms were elaborated into highly developed systems, some of which resemble formal records, while others may have been mnemonic devices, memory prompters designed to record texts.

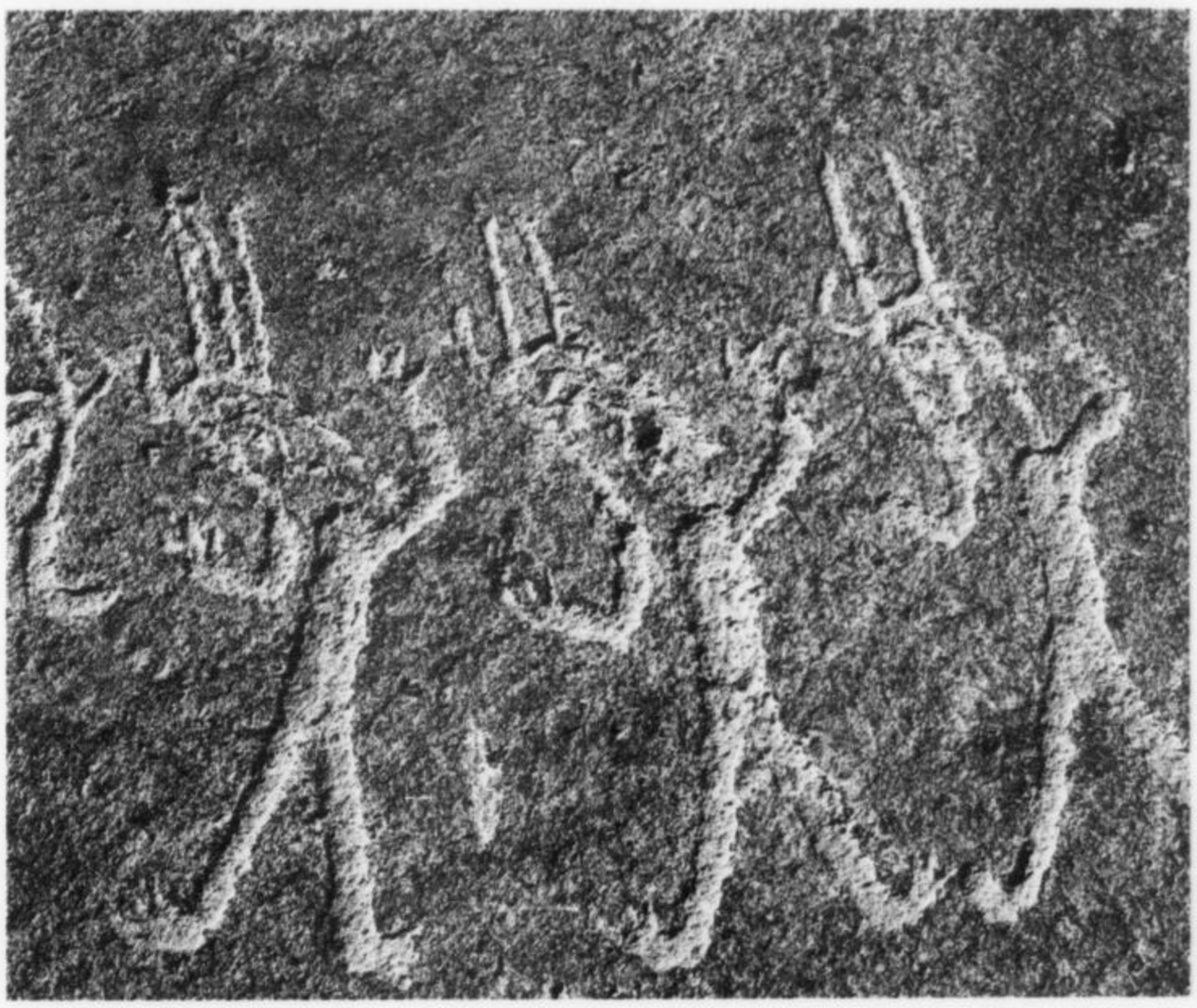
From about the end of the Ice Age, about 10,000 years ago, rock paintings begin to appear outside caves. This almost certainly reflects the selective survival of rock art rather than a new preference in the choice of sites. Rock paintings can survive very well in the stable environments of deep limestone caves but not on rock surfaces that are more exposed to damage. The apparent proliferation of rock art around the end of the Ice Age therefore indicates, not an increase in art production but that a threshold of preservation has been crossed.

On all continents except Antarctica, rock paintings now bear witness to a multitude of art styles and cultures, to the progressively increasing ethnic diversification of humanity on all continents, and to the development of the major religions. Even the recent historical developments of mass migrations, colonization and religious expansion are all reflected in rock art.

Dating

There are two basic forms of rock art, petroglyphs (or carvings) and pictographs (or paintings). The motifs of petroglyphs were created by engraving, hammering, incising or abrading ▸

Rock carvings of four human figures. Toro Muerto (Peru).



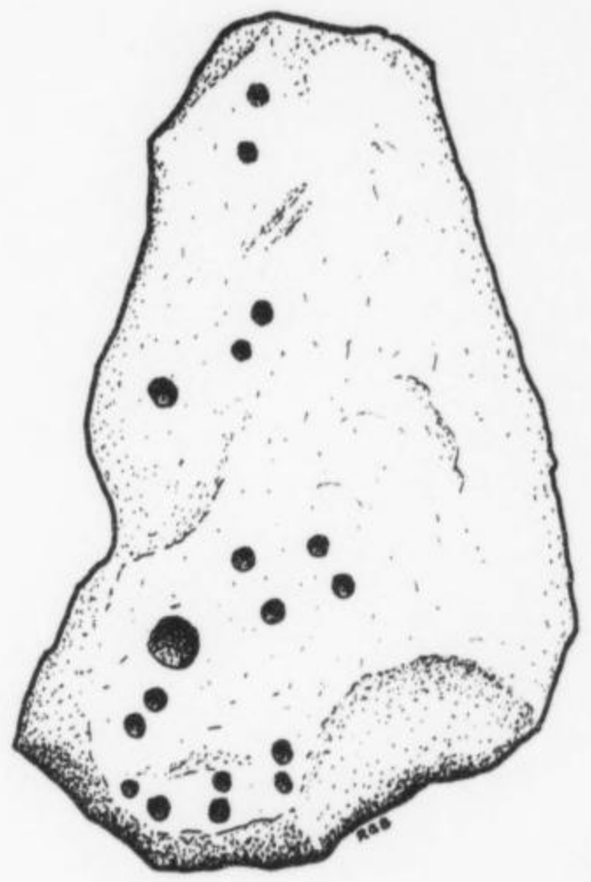
© Robert Bednarik, Melbourne, Australia

rock surfaces. In pictographs some material was added to the rock surface, usually paint. The distinction is important because it determines approaches to dating.

The methodology of dating rock art scientifically has only developed over the last fifteen years or so. It is still therefore in its infancy, and nearly all the world's rock art remains effectively undated. This does not mean that we have no idea of its age, however, since there are often various indicators of approximate or at least probable age. It is sometimes possible to determine the age of rock paintings quite accurately, especially when the paint contains organic substances or microscopic inclusions that are datable through their radiocarbon content. Careful interpretation of such analytical results can make dating quite reliable.

Set of 18 cup marks on the underside of a rock slab placed over a Neanderthal child's grave (France).

© Robert Bednarik, Melbourne, Australia



Stylized painted animal figures at Raisen, near Bhopal (India).

© Robert Bednarik, Melbourne, Australia

Dating petroglyphs, on the other hand, remains very difficult. Most current methods seek to establish the age of a mineral skin that may have formed over the rock art and thus provide merely minimum ages. One technique is to analyse microscopic organic material encased in such mineral skins; laser technology can be used successfully for this purpose. But currently only one method is available to determine the age of the petroglyph itself. It is based on the fact that the mineral crystals that were fractured when the petroglyph was hammered into the rock initially had sharp edges, which became blunt and rounded with age. By determining from nearby surfaces of known ages how fast this process operates, the age of a petroglyph surface can be estimated.

Several archaeological dating methods can also provide limited assistance. If, for instance, an archaeological, datable layer of soil covers petroglyphs on a rock wall, it can be assumed to provide a minimum age for the rock art. Stylistic comparison has often been used to construct chronological frameworks for rock art, but not very successfully.

The most promising methods of studying rock art often resemble those of forensic science. For instance, paint components may tell us how the paint was mixed, what implements and additives were used, where the pigment came from, and so forth. Human blood, which was used as a binding agent in the Ice

Stencilled outlines of boomerangs, axes and hands. Carnarvon Gorge, Queensland (Australia).

© Robert Bednarik, Melbourne, Australia

Age, has been detected in ancient Australian rock paintings. Australian researchers have also found as many as forty very thin superimposed layers of paint at many sites, indicating continuous repainting of the same rock surfaces over long periods of time. Like the pages of a book, these layers record the history of the site's use by artists of many generations. The study of such sequences is only just beginning and may result in entirely new insights.

Paint brush fibres have been found in rock art paint, and so has pollen which can indicate vegetation contemporary with the time of painting. In some French caves, distinctive paint recipes have been identified from their chemical makeup. In the case of charcoal pigment in a black painting, even the genus of the tree from which the charcoal originated has been established.

Rock art research has become a scientific discipline in its own right, and already draws on many other disciplines, from geology to semiotics, from ethnography to computer science. The methodology includes colour enhancement of electronic imagery derived from very faded, barely visible pictures; various specialized recording techniques; and microscopic study of tool marks and minute residues.

Fragile vestiges

Methods of rock art conservation are also being developed and increasingly applied. Rock art panels and even entire sites are being replicated in order to protect the original from deterioration. Yet much of the world's prehistoric art is now severely threatened. Acid rain dissolves the protective mineral coating that covers many petroglyphs. Increasing cultural tourism, encroaching urban, industrial and mining development, even misguided research all take their toll.

Efforts are being made in some countries to protect and preserve this remarkable but fragile cultural resource. International agencies, especially UNESCO, can help by encouraging international uniformity of protective legislation, streamlining research and applied science, and helping develop global approaches to rock art conservation and site management. ■

1. Rock paintings produced by a society of early gatherers, Tassili-N'Ajjer, Algeria (so-called "round head" phase around 5000 B.C.). They show 2 figures, each wearing a mushroom-shaped mask and holding a mushroom from which a line of dots reaches up to its head. Three elements of rock art "grammar" are found in this composition: the human figure, the mushroom shape and a set of small dots.

2. Rock paintings made by hunters of the Mesolithic period (6,000-8,000 years ago) in the Levante area of southeastern Spain. Anthropozoomorphic figures occur in rock art all over the world and over several millennia. These are carrying weapons.

3. Rock paintings of anthropozoomorphic figures produced by Neolithic hunters (5,000-6,000 years ago) at Ouan Mellen in the Tassili-N'Ajjer.

Drawings on pages 10-16
© Emanuel Anati, 1997, WARA, Centro Camuno de Studi Preistorici, Capo di Ponte, Italy

The writing on the wall

BY EMMANUEL ANATI

Stag hunt (500 B.C.). Chelly Canyon, California (U.S.A.).

© Monique Pietri, Paris

Prehistoric rock paintings and engravings may be a language with its own grammar and syntax

All over the world, in more than 120 countries, groups of human beings have left behind examples of rock paintings or carvings. Rock seems to have been the first support they chose on which to create their works of art; it is, at any rate, on rock that examples of their art have come down to us. Body-painting and tattoos, ornaments, decorations, paintings on bark or on palm leaves, drawings in sand and collections of unusually shaped or coloured pebbles are other art forms that may have existed before rock art, but they have not withstood the passage of millennia, while music and the dance have left only indirect evidence of their existence in graphic representations or in the remains of musical instruments discovered in the course of archaeological excavations.

Rock art is typically the product of pre-literate societies, beginning with the emergence of *Homo sapiens* and generally dying out when the communities that practised it acquired a "written" form of communication. It thus constitutes by far the most important record we possess of humanity's history before the invention of writing. It also provides invaluable source material for the study of human beings' cognitive development, which is why it is so important to establish a world data bank, as the WARA (World Archives on Rock Art) project aims to do (see Fact file, page 39).

Almost all prehistoric art focuses on three basic themes: sex, food and territory. Humans' main concerns seem not to have changed very much down the ages. . . .

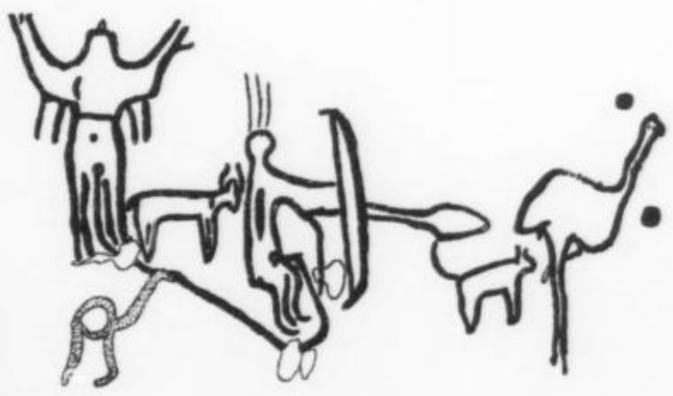
4. Rock engravings found at Tamgali (Kazakhstan). Two anthropomorphic wolves or foxes armed with hooks or having hook-shaped hands are moving in on a small creature with a tail and a feather on its head. The scene appears to depict a dance relating to a myth.

The art and its environment

Before looking at the graphic, intellectual and ideological content of the works themselves, we need to clarify a number of essential points concerning the relationship between them and their environment.

Space. The natural forms and the position selected on the rock face are the most obvious such relationship—so obvious, indeed, that it is often overlooked. In fact, the relationship between the thing depicted, the sign, and the positioning of the depiction is a concrete, physical one, and corresponds to a specific choice, whether conscious or unconscious. Comparative studies carried out world-wide have demonstrated that the artists chose the positions of their images in accordance with widely recurring criteria.

The individual. The person making that choice obviously had a specific identity: he or she may have been young or old, a shaman or a lay person—art has never been practised by all and sundry. Another type of relationship is therefore to be sought in the linkage between the surviving work of art and the type of individual who created it. In some cases, in tribal art of a later date as well as in prehistoric art, it is possible to ascertain whether the work was executed by an initiate or a non-initiate, by a man or by a woman. ▸



5. Rock engraving at Tiout (Algeria) produced by hunters some time during the 2nd millennium B.C. The way in which the various elements are combined shows a certain logic and an ability to synthesize and handle abstractions. Analysis of the "syntax" of the engraving highlights the parallel between hunting and sex. The ostrich hunter (centre) is using a bow and arrow and is accompanied by a dog. A line runs from the hunter's penis to the pubis of a female figure behind him whose gender is indicated by a pair of parallel lines on either side of her body. Similar lines, or "lips", represent the female sex organ.

Between these two figures is a goat with a triangular symbol between its horns, and the same symbol recurs on the woman's head. This may be an ideograph providing a particular item of information: the animal figure associated with it could be a clue to the woman's identity or name. The huntsman's identity is established by three vertical lines above his head. The figure of the ostrich, the huntsman's prey, is accompanied by two dots, conferring the status of an object on it and meaning "something to be hunted".

6. Rock engraving by early hunters of the Murray River region (southern Australia). It features a schematic outline of a quadruped accompanied by several ideographs. A sign representing the vulva occupies a central place. There are also several series of dots, lines, groups of lines and a dot-and-line ideograph that recurs several times. This combination of graphemes denotes a repetitive syntax characteristic of a certain type of cognition found world-wide.

7. Quadruped

Time. The painting or engraving was made at a particular time of the day or night, in summer or in winter, or even at a particular point in the artist's personal life, The act of executing it occurred within a dynamic context, *before*, *after* or *during* other physical or mental activities—before or after the hunt, before or after eating or sleeping, before or after doing other things. It also took place *under* particular circumstances, at a moment spent in solitude or in company, during a ceremony or the practice of meditation, in a noisy place or in total silence—like any other act, it fits into a temporal and sequential context. We are thus presented with yet another type of relationship, that between the work and its temporal context. In our efforts to recreate that context, we can often do no more than speculate, even when we are able to establish whether the painting in question had a public or private function.

Types of sign

There are several types of sign, and relationships exist both between similar signs and between different signs. I apply the term "syntax" to the mode of relationship (juxtaposition, sequence, scene) and "grammar" to the specific form of each sign.

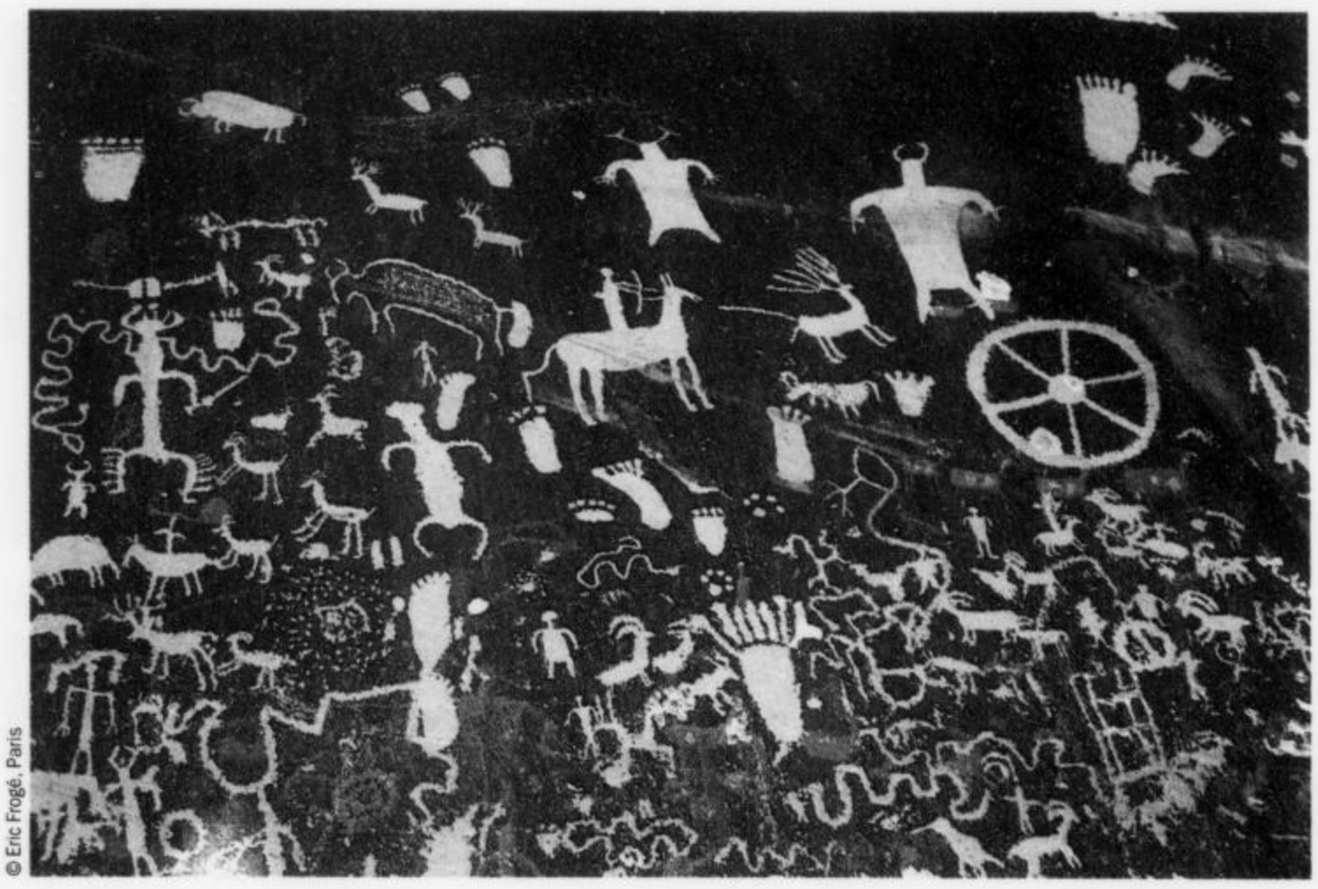
Three grammatically distinct types of sign recur everywhere (drawing 1):

Pictographs (or *mythographs*). These are recognizable representations of real or imaginary objects, animals or human beings.

Ideographs. These are repetitive signs or combinations of signs, sometimes taking the form of discs, arrows, branches, sticks, signs in the shape of trees, crosses, mushrooms, stars or snakes, "lips", zigzag patterns, "phalluses" or "vulvas". Their recurrent nature and the particular relationship between them indicate that they are intended to convey conventional concepts (drawings 2 to 5).

Psychographs. These seem neither to represent objects nor to be symbols. They appear to have been created as a result of violent discharges of energy, perhaps in order to express feelings about life or death and feelings of love or hate, but could also be interpreted as expressing portents or other very subtle perceptions. They occur more often in cave art and on moveable objects than in open-air rock art, in which the choice of rock and its actual shape seem to fulfil the psychograph's role.

The syntax specific to the art of the early hunters combines pictographs representing various common types of animal, such as elephant and giraffe in the case of the United Republic of Tanzania or bison and horse in western Europe, with, in both these cases, ideographs which are in many cases identical. Various studies are at present being carried out on the significance of these combinations of pictographs and ideographs, but the general opinion seems to be that they are based upon the same logic as that which underlies the first pictographic writing systems, and indeed may



© Eric Frogé, Paris

Rock engravings on the so-called "Newspaper Rock", Canyonland, Utah (U.S.A.)

8. Stylized profile of a quadruped accompanied by ideographs careved on rock at La Ferrassie, Dordogne (France) by Palaeolithic hunters (around 27,000-30,000 years ago). The way of combining the graphemes is reminiscent of representations found on the other side of the globe, e.g. that shown on opposite page (drawings 6 and 7).

9. Quadruped

IDEOGRAPHS

Vulva sign

Series of dots

Group of dots and lines

Pairing of dot and line

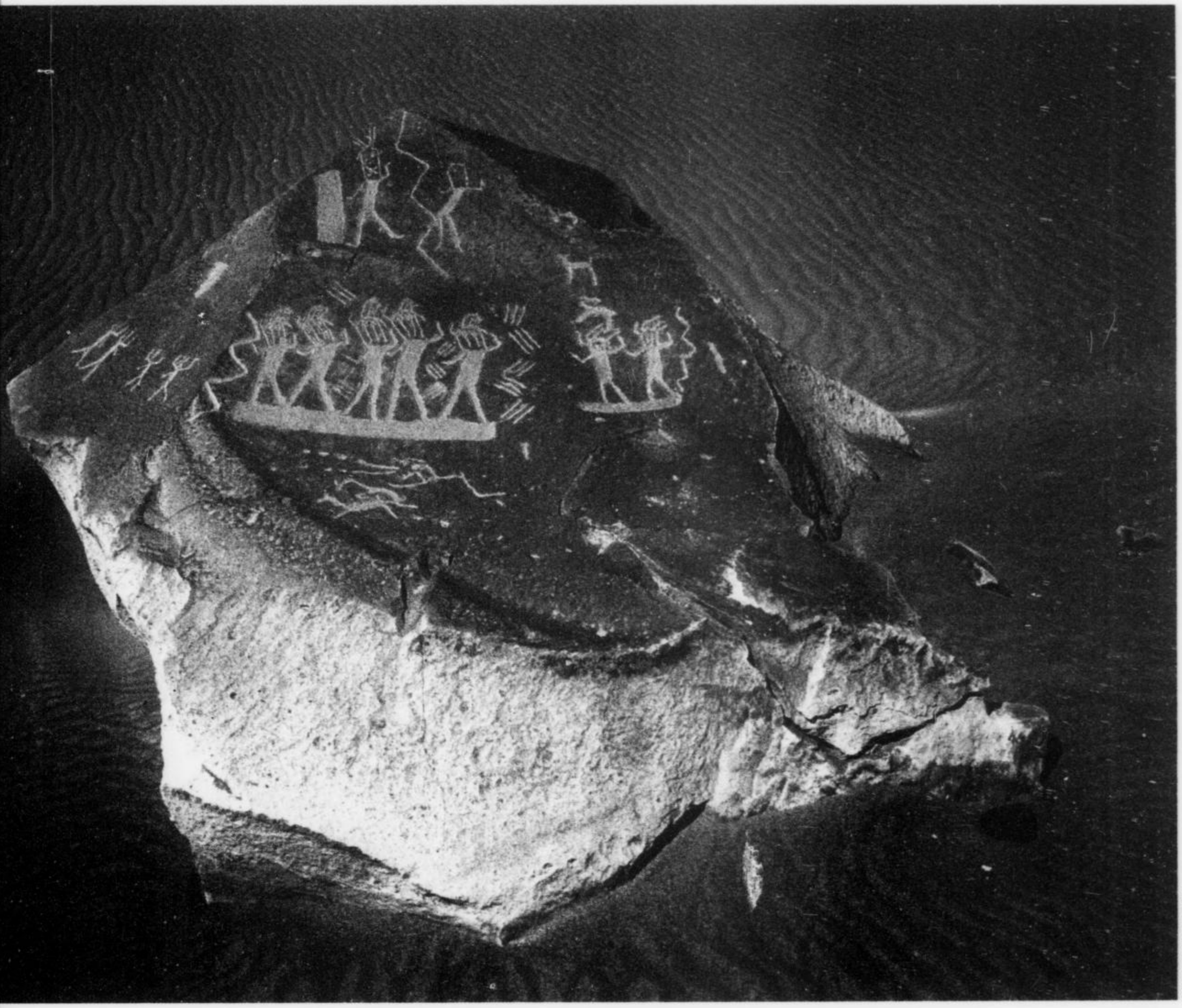
Combined dot-and-line sign

already constitute one such system—which would indicate that the logical process leading to the invention of writing was already under way 40,000 years ago (drawings 5 to 9).

A common conceptual basis

The physical dimensions of a picture are a very inadequate means on which to base an understanding of everything that it represents. In Renaissance painting, for instance, although the dove is shown as a particular species of bird, to grasp the full significance of a dove appearing, say, in an Annunciation scene by Fra Angelico it is not enough to say that there is a bird, in this case a dove, in the corner of the picture. Only if the viewer is familiar with the subject being illustrated by the artist and with the mythical and conceptual background of the artist's native region does the full symbolism and specific significance of the dove, representing the Holy Spirit in Christian mythology, emerge. Similarly, Picasso's dove of peace is far from being ▶

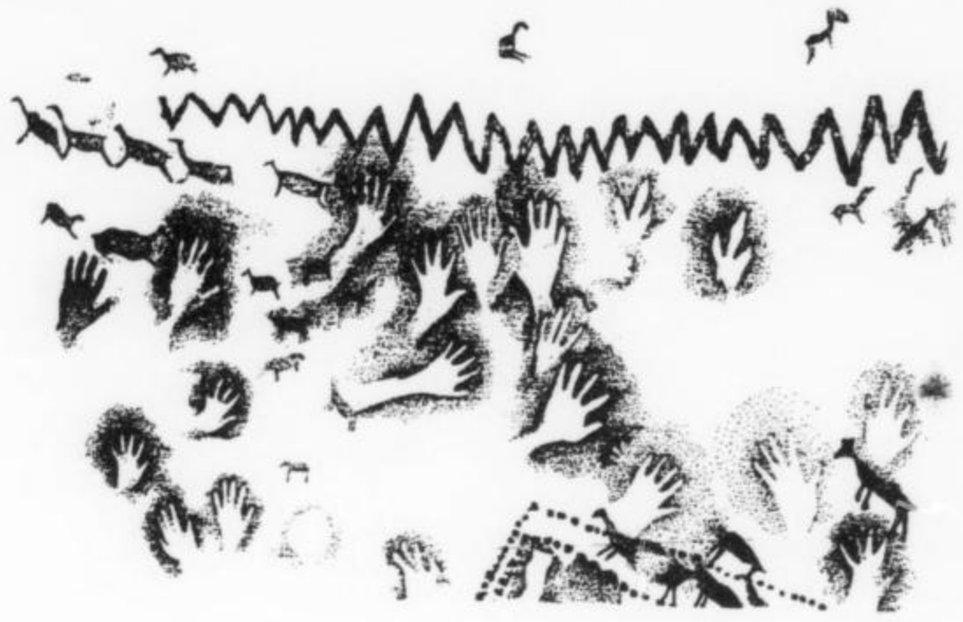
Human and animal figures. Rock engravings at Toro Muerto (Peru).



© Marco/Ask Images, Paris

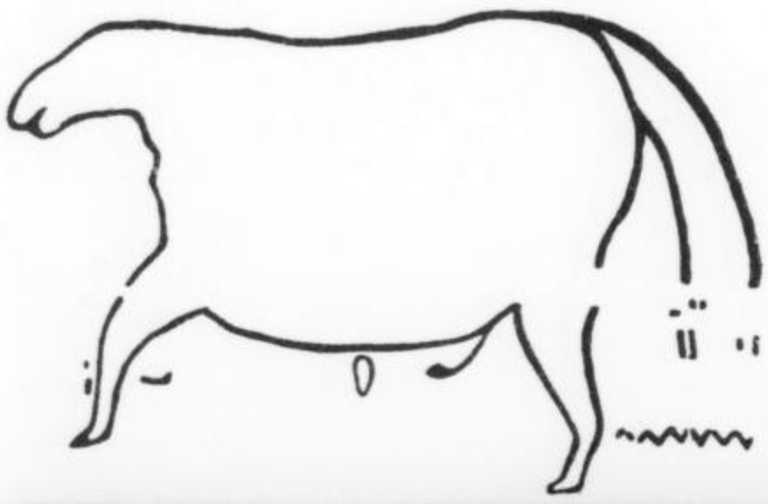
▸ just a dove: the artist has added to the pictograph an ideograph, the characteristically Mediterranean olive branch, the symbolism of which we can appreciate only because we have been initiated into it.

Prehistoric pictographs, often accompanied by ideographs, should be perfectly "legible" to all who are aware of their conceptual content, but the handing on of the tradition direct from generation to generation has been interrupted, and it is precisely the job of the archaeologist to assemble as much material and as many observations as possible to try and determine that content.

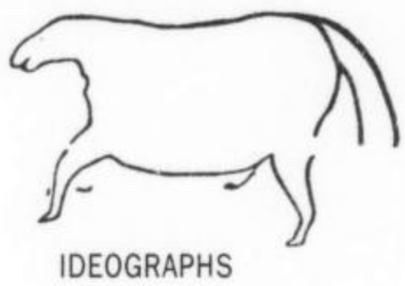


12. Rock paintings at Rio Pinturas, Patagonia (Argentina). Three distinct phases can be recognized: group of graphemes, hand stencils and prints, stencilled outlines of animal spoors, objects (tools), zigzag motif; series of animals added later; series of dots added later.

10. Stylized profile of a quadruped accompanied by ideographs carved around 8000 B.C. on rock in the valley of the river Lena (Siberia). A vulva sign has been drawn near the animal's penis. Note the combinations of lines and dots and the presence of a zigzag motif. Though different in style, the manner of combining the different elements is reminiscent of that in the 2 works shown in drawings 6 to 9, illustrating how certain archaic typologies survived down the ages.



11. Quadruped



IDEOGRAPHS

Vulva sign

Group of dots and lines

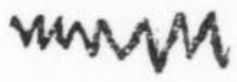
Zigzag

13.

Handprint and stencilled outlines of hands

Animal spoor outlines

Animal figures drawn on top



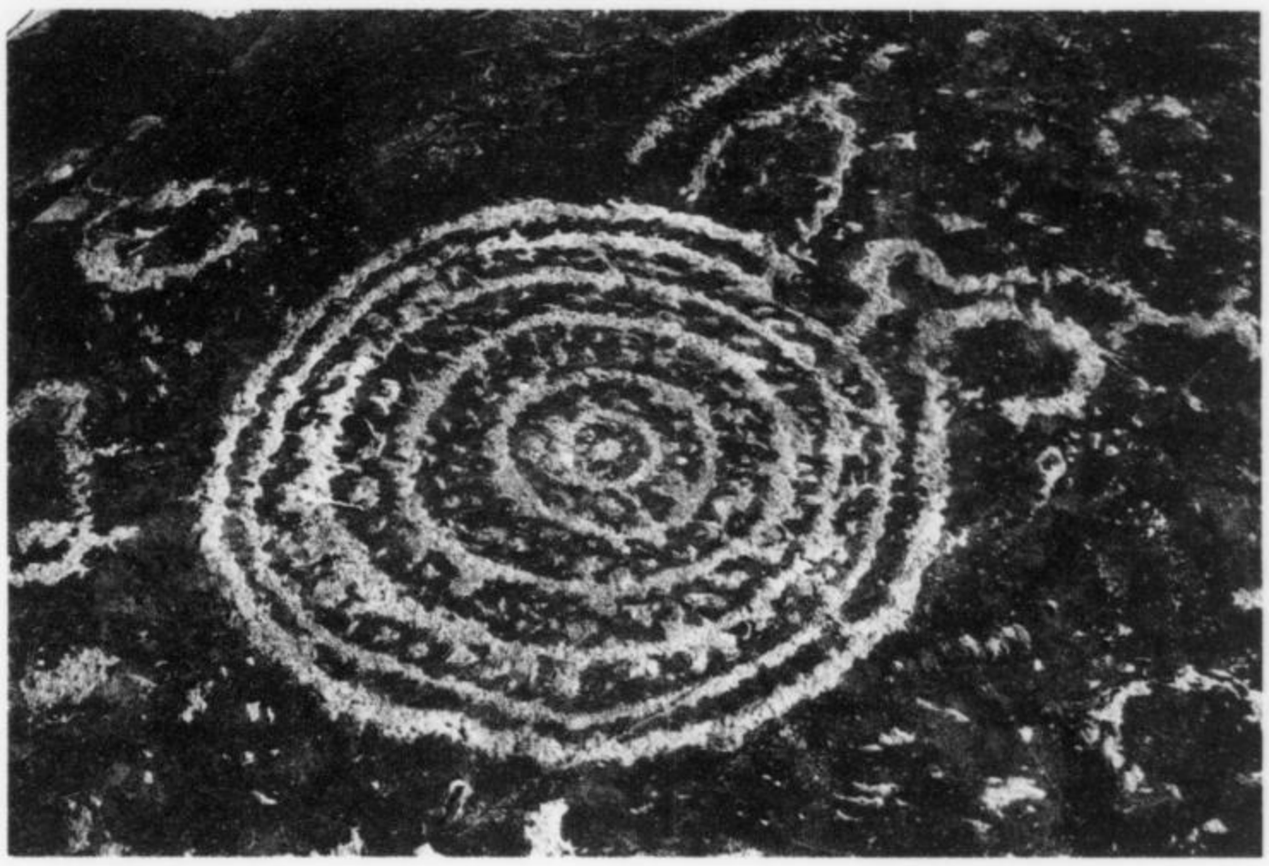
Zigzag

Tool (?axe)

Series of dots added later

Rock engravings of concentric circles associated with a warrior (right), at Bedolina, Val Camonica, Italy. (Iron Age, 850-700 B.C.).

© Monique Pietri, Paris



© Monique Pietri, Paris

Concentric circles engraved in the rock at Oraibi, Arizona, U.S.A. (Neolithic period, 5000-3000 B.C.).

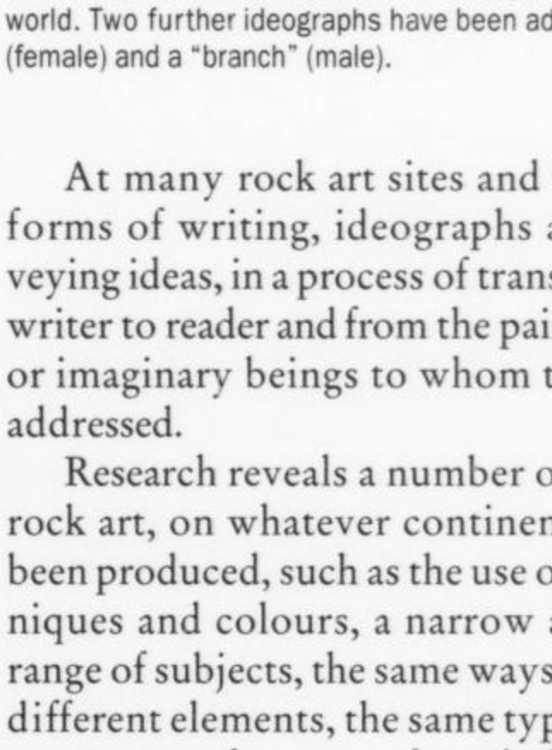
16. Rock paintings at Nabarlek, Arnhem Land, Australia (art of archaic hunting peoples). Stencilled outlines of hands, animal spoors and tools. Three of the hands represented are mutilated, a detail that recurs in archaic paintings all over the world. Two further ideographs have been added later, a disc (female) and a "branch" (male).

At many rock art sites and in the earliest forms of writing, ideographs are signs conveying ideas, in a process of transmission from writer to reader and from the painter to the real or imaginary beings to whom the message is addressed.

Research reveals a number of constants in rock art, on whatever continent it may have been produced, such as the use of similar techniques and colours, a narrow and repetitive range of subjects, the same ways of combining different elements, the same type of logic, the recurrence of a range of symbolic ideographs and, especially, the combination of pictographs, ideographs and psychographs (drawings 10 to 13). This raises further questions and suggests that the same structural basis and the same conceptual dynamics may underlie all creative art.

Five major categories of art

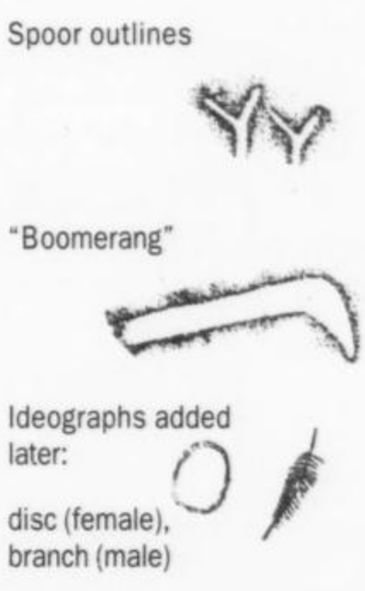
In terms both of style and of content, it is possible to distinguish five broad categories



18. Drawing of an early Palaeolithic rock engraving, probably made 27,000-30,000 years ago, at La Ferrassie, Dordogne (France). The artist skilfully chose to work on a rock with a natural shape suggesting the figure of a bison, adding engravings of horns and an eye (left). Two vulva ideographs and several cup marks were also added.

14. Rock paintings in Queensland (Australia) produced by very early hunting peoples show stencilled outlines of hands, in combination with stencilled animal spoors, zigzag motifs and shapes of tools. The forms are grouped according to a syntax identical to that used in the earliest phase of the previous work (drawings 12 and 13) produced on the other side of the world.

17.
Hand outlines



of art, each with its own characteristics that may be found everywhere.

Early hunters: art practised by hunters who were ignorant of the bow and arrow, combining signs and figures but without composing scenes as such. Its syntax consists chiefly of logical sequences and metaphorical associations.

Early gatherers: art practised by peoples whose economy was based mainly on the gathering of wild fruit, taking the form of simple scenes of a metaphorical nature depicting a surreal world. Much of this art seems to have been produced in a state of hallucination.

Later hunters: art practised by hunters who knew how to use the bow and arrow, consisting of anecdotal and descriptive scenes and mainly depicting the hunt and events in the community.

Pastoralists and herdsmen: art practised by peoples whose main economic activity as depicted therein was raising livestock, and focussing on the depiction of domestic animals and scenes of family life.

The complex economy: art practised by peoples with a diversified economy, including farming, and consisting mainly of mythological scenes and compositions made up of signs and patterns.

This classification is necessarily only a rough outline; there are transitional phases and groups that display a mixture of characteristics, and there can also be marked differences within a given category. In the present state of research, however, and given the considerable amount of evidence available to us, an approach based on style and subject-matter is clearly the one to be followed in order to transcend the limitations of regional frontiers.

Applying a set of criteria based on the subjects and on the typology of representations, it has been possible to pinpoint certain recurrent and significant elements, and also to put forward the hypothesis that there exist certain ▸

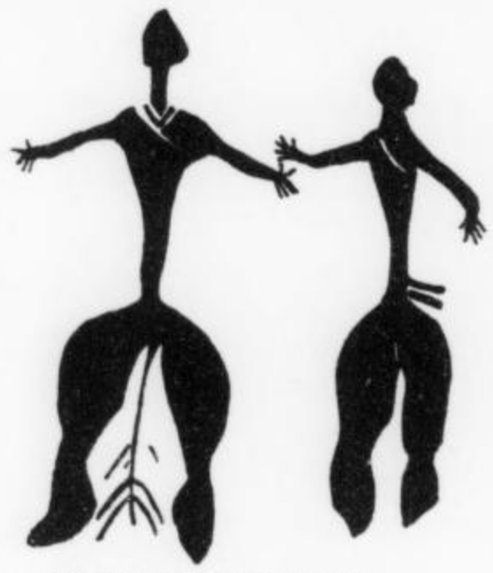
▸ universal reflexes, linked to given ways of life, that may have influenced not only people's behaviour but also their thinking and their associative processes (and hence their ideology) and, consequently, their art forms. From the very beginnings of art as we know it, some 40-50,000 years ago, human beings have acted in accordance with specific mental processes that have led them to invent relationships, symbols, abstractions or sublimations which even to this day constitute one of their specific universal characteristics.

A universal language

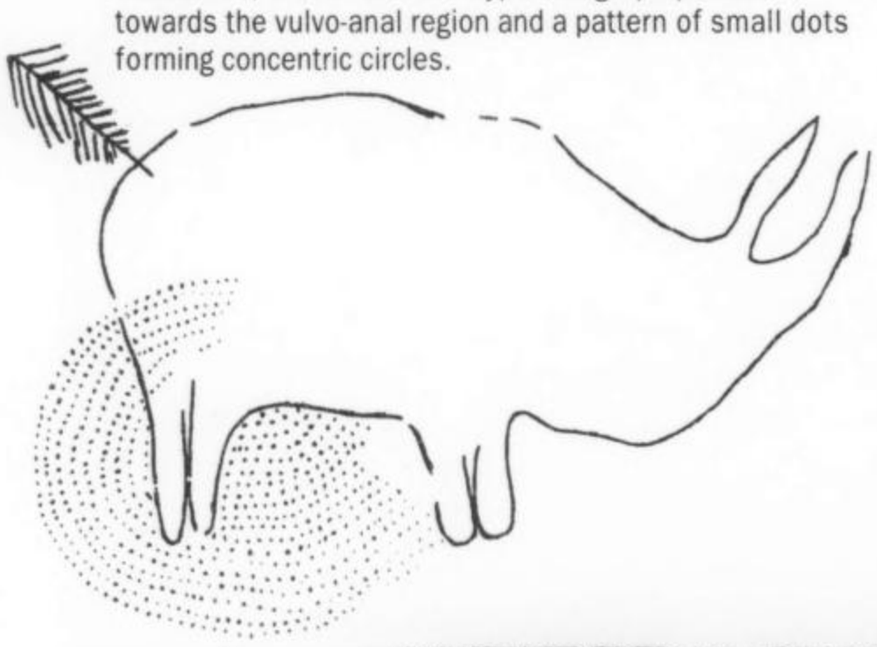
Before the advent of *Homo sapiens* and of art, the human race had been evolving for four million years, so that, counting from the time when beings capable of laughing and crying and of wondering about life and the future first appeared on earth, art may be said to have existed for only the last one per cent of human history. In relation to what earlier hominids achieved, this represented not so much evolution as a revolution. Various attempts have been made to prove that apes and *Homo erectus* were capable of producing art, suppositions that are, to my mind, totally unfounded. The emergence of our identity as *Homo sapiens* presupposes the acquisition of a whole set of specialized functions and particular attributes, of being able to see, hear and feel with a lucidity and in a manner quite specific to the genus *sapiens* (drawings 12 to 17).

Some things about rock art from the distant past are still relevant today. The visual language of early hunters is a universal language since, quite apart from systems of representation and styles that are often very similar in different parts of the world, it also displays combinations of figures and symbols that derive from the same logic, suggesting a similar way of thinking and of self-expression (drawing 18). It is not unreasonable to assume that the spoken language was also based on universal principles (drawings 19 to 22).

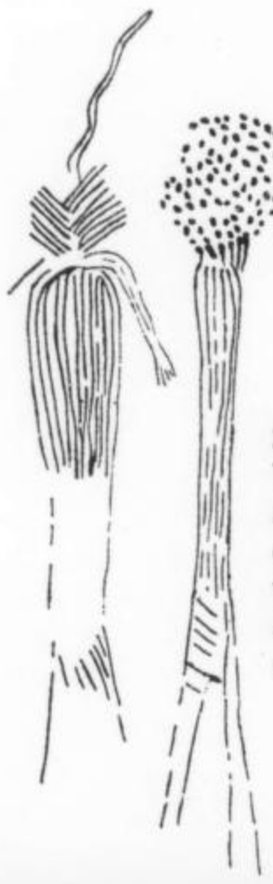
In intellectual terms, it would seem that the capacity of *Homo sapiens* to produce art is innate. It would perhaps be better to replace the somewhat pretentious term *Homo sapiens* (sometimes even cited as *Homo sapiens sapiens*) by that of *Homo intellectualis.* ■



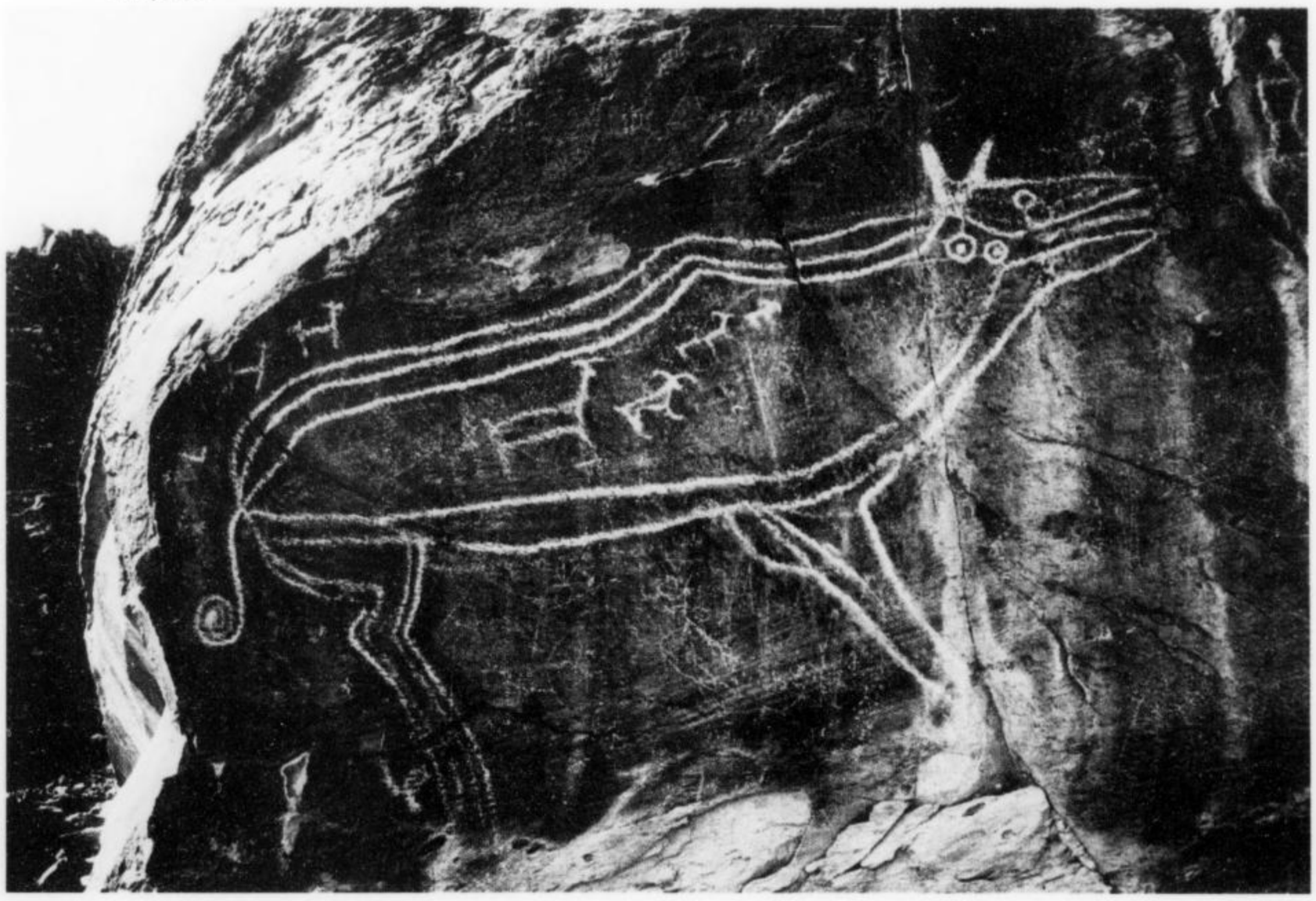
19. Symbols of male and female. The rock engravings executed by the Neolithic farmers of the Gobustan (Azerbaijan, c. 5000 B.C.) use the same graphemes as those employed several millennia before by early hunters. The "branch" symbolizes the male sex organ, while the two parallel lines or "lips" on the woman's hip stand for the female organ.



20. Rock painting executed by early hunters at Pahi, Masai Escarpment (United Republic of Tanzania). It features the stylized outline of a quadruped, probably a rhinoceros, with a "branch"-type ideograph pointed towards the vulvo-anal region and a pattern of small dots forming concentric circles.



21. Rock paintings by early gatherers at Kundusi (United Republic of Tanzania). Ideographs have been used to depict the heads of two anthropomorphic figures so as to make the figures identifiable. One consists of a chevron pattern with a wavy double line emerging from the top, probably representing a "branch"; the other is a group of dots forming a kind of sphere. The resemblance to the previous illustration is unmistakable, although the latter dates from an earlier period.



© 1997 by WARA, Centro Camuno di Studi Preistorici, Capo di Ponte (Italy)

22. Illustration of a Great Plains Indian (United States) story about the winter of 1876-1877: "Chief Three Stars [General Crook] took with him the young braves of Chief Red Cloud to fight with them against the Cheyenne".

Mythical beast over two metres long, at Helanshan (China).

© Degas Parra/Ask Images, Paris

The prehistoric imagination

BY DENIS VIALOU

Prehistoric art combines unity of subject and technique with an astonishing symbolic diversity in different cultures and periods

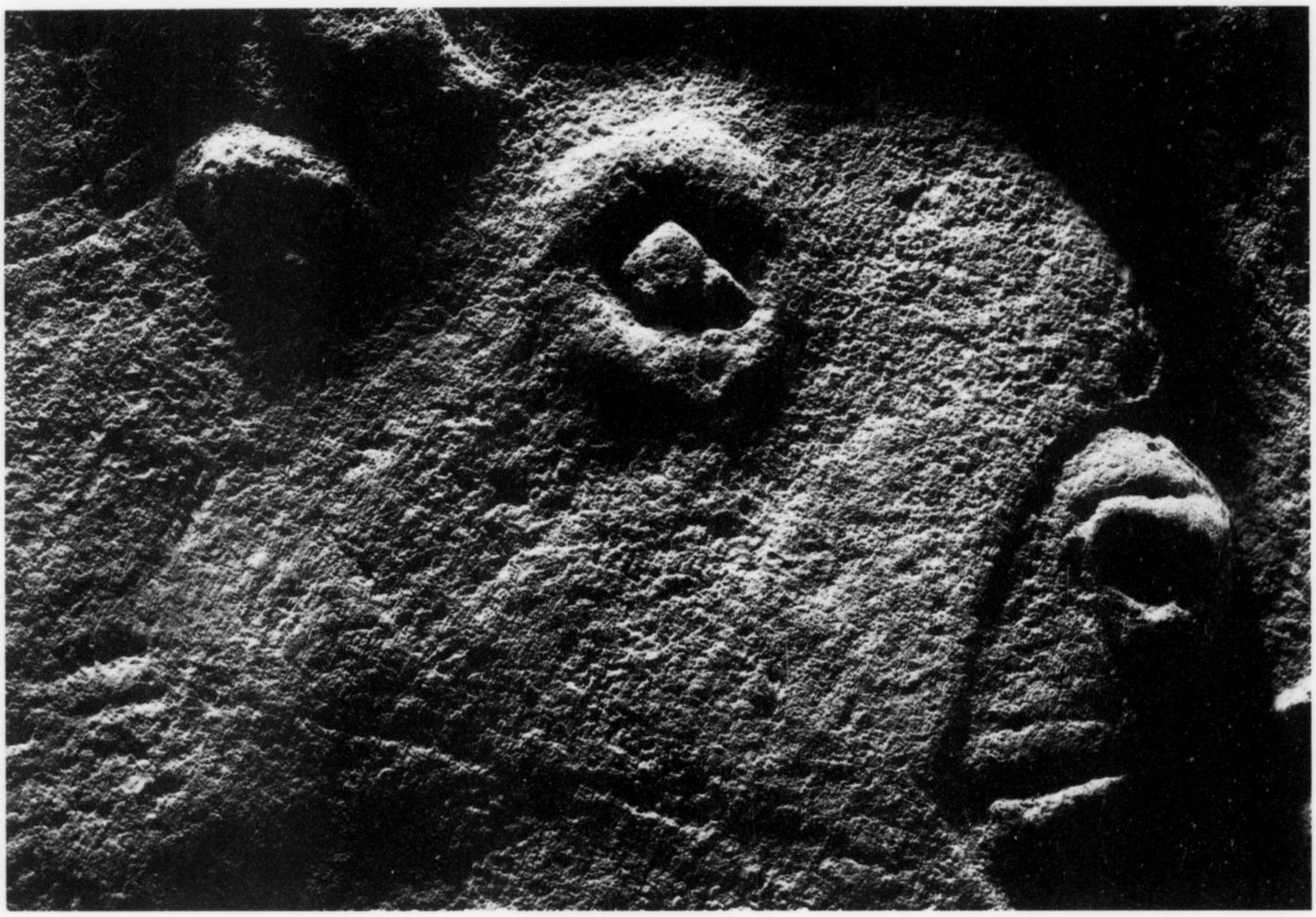
Prehistoric art was an art closely bound up with the lives of the hunters and herdsmen who created it, an art of nature and, first and foremost, an art of the open air. Scattered all over the world are millions of rock-art sites bearing witness to the creative activities of human beings over a period stretching back at least ten millennia into prehistory. The art in question consists of engravings and, to a lesser extent (probably because they have not been so well conserved), drawings and paintings, on surfaces that vary from region to region in accordance with their geological characteristics—single boulders or blockfields (boulder-covered areas), flat rocks and laterite surfaces, protruding parts of mountainsides or the walls of rock shelters. In comparison with this abundance of rock art in open-air sites, there are relatively few examples in caves.

By contrast, the art of Palaeolithic Europe and especially that of the Magdalenian period (17,000-10,000 years ago) is mainly to be found underground. About 250 caves decorated with paintings or engravings have so far been discovered, mainly in France and Spain, as against ten or so open-air sites, either engraved rocks or shelters decorated with carvings. Unlike the art, open to light and life, created by societies on the move, the parietal (i.e.wall) art of the caves is hidden away in the dark depths of the earth.

The symbolic conquest of the dark

Signs of prehistoric human habitation discovered in cave mouths in the nineteenth century lent credence to the old myth of the cave man. In actual fact, however, the great hunters of the Palaeolithic never lived or stayed for ▸

Top, the black bull, a rock painting in the Lascaux cave, Dordogne (France).



© Charles Lénars, Paris

Head of a bull carved in limestone, originating from Angles-sur-Anglin, Vienne (France).

long in dark caves, and indeed it would be impossible for humans to live there for long. This only serves to emphasize the symbolic significance of the parietal art which was invented by Palaeolithic painters and engravers and of which they became masters. These artists must have enjoyed a high status in society by virtue of their skills and of the fact that they gave expression to the lore and beliefs of the communities to which they belonged.

The artists of the Gravettian culture (25,000-20,000 years ago), named after the La Gravette site in south-western France, were the first to dare set foot in caves, some ten of which have so far been reconnoitred, but they never ventured too far in and away from daylight. The Pair-non-Pair cave (in France's Gironde *département*) with its dozens of engravings and the Gargas cave (Haute-Garonne, France), which contains both engravings and paintings (outlines of hands), are splendid examples of the work of these pioneers. The artists of the Solutrean period (21,000-18,000 years ago), named after the La Solutré site, also in France, were scarcely more adventurous: fewer than twenty caves decorated by them have been found in France and Spain, but on the other hand they were remarkably skilful at creating low-relief carvings at sites in the open air.

The examples of Magdalenian parietal art scattered about the chambers and galleries of caves, some of them vast (those at Rouffignac in France's Dordogne region, for instance, stretch for several kilometres), show that the Magdalenians had acquired and perfected the skills required for working underground: they used bowls hollowed out of stone, usually limestone, filled with animal fat and with wicks made of vegetable material, as lamps that, as recent experiments have shown, could burn for several hours.

Ivory head of the "Venus" of Brassempouy, Landes (France). This sophisticated representation of the human face dates from the Gravettian period (27,000-22,000 years ago).

© Charles Lénars, Paris

Cave art and cave architecture

With one or more entrances, chambers, galleries and one or more accessible extremities, caves are an ordered and restricted space in which to work, unlike open-air shelters, which provide a more or less vertical, two-dimensional surface like a screen blocking out the horizon, and even less like an open area of more or less horizontal rock.

The placing of the rock paintings in relation to the topographical features of the cave is integral to their symbolism. In the Niaux cave (Ariège, France), for example, certain types of red-painted signs, some being patterns of dots and others "claviform" or club-shaped, appear in combination and are spaced out along the corridor that leads into and runs through the cave. Other types of geometrical or abstract drawings, angular signs for example, occur almost exclusively in a large apsidal hall known

as the *Salon noir*, where they are to be found in combination with drawings of bison and other animals, also drawn in black.

In a Palaeolithic cave, the thematic structure of the wall paintings (i.e. the types of signs and species of animals) and their symbolic structure (the spatial relationship between themes) is thus conditioned by the natural architecture of the site, the spaces and volumes of which proceed in sequence from the mouth to the rear of the cave and back again towards the mouth and thus towards normal life outside.

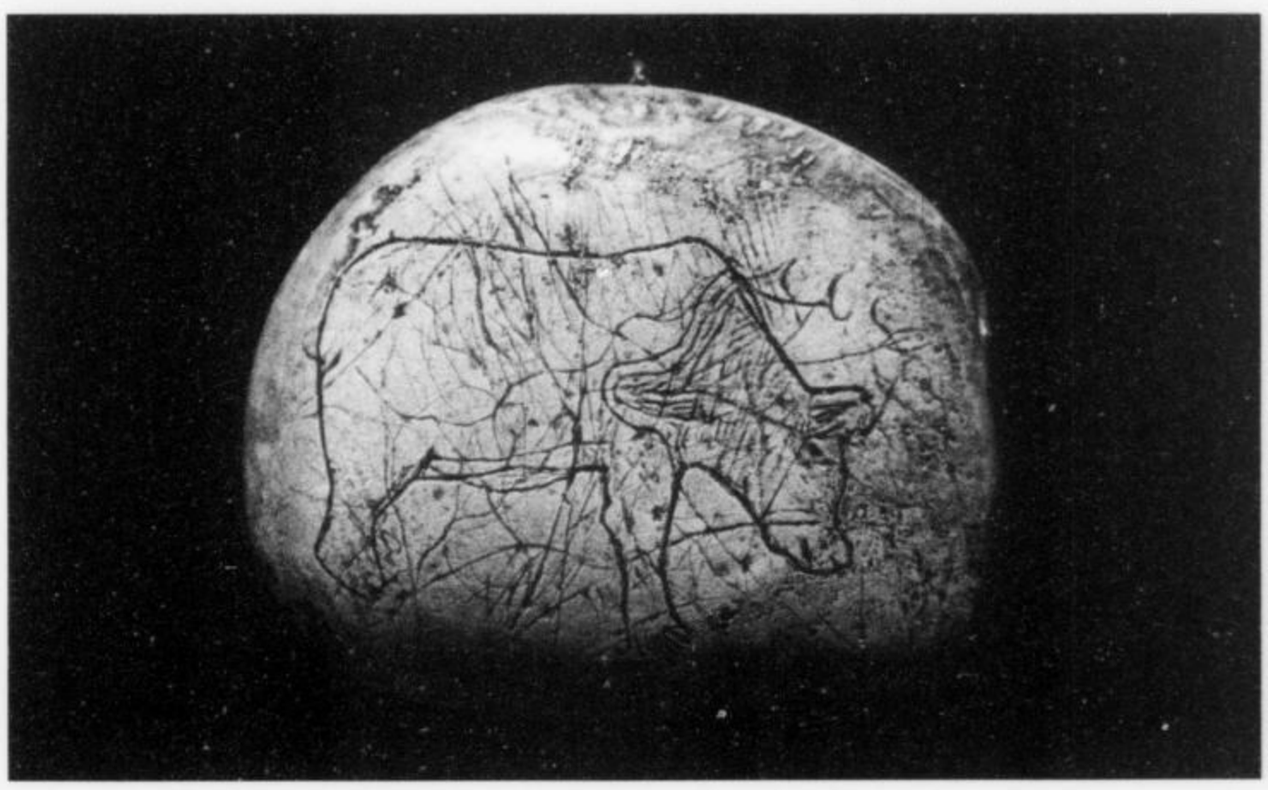
The walls enfold the visitor and create an infinite variety of volumes, some easier of access or passage than others, some as vast and impressive as cathedrals and others no better than oppressively narrow crawl spaces. These natural properties of the site are also incorporated into the layout of the wall paintings and contribute to their symbolic significance. A visitor standing in the middle of the Rotunda of the Lascaux cave in the Dordogne is struck by the frieze of huge bulls running round the chamber on the background of a band of spotless white rock that stands out between the blackish base of the walls and the deeply furrowed, lumpy ceiling.

Open-air sites obviously do not have the infinite variety of shapes and volumes that caves and their walls, ceilings and floors possess. A rock painting or engraving in a shelter can usually be taken in at a glance or from a single vantage point. In a cave, on the other hand, the viewer has to walk through the symbolic space created by the representations in order to see and "read" them in their entirety; whether juxtaposed in groups or isolated and dispersed, they only come to life as the viewer, and accordingly the light source, moves along. Immobilized in the darkness and scattered about on the surface of the complex and infinitely varied naturally occurring forms, they need time in order to be viewed in succession and then perceived in combination as parts of a single whole—the cave itself.

The ivory "Venus" of Lespugue (France), a masterpiece of prehistoric carving (about 22,000 years old).

© Hatala/Musée de l'Homme, Paris

Bear engraved on a pebble, France, Upper Palaeolithic (35,000-10,000 years ago).



© Charles Lénars, Paris. Musée des Antiquités nationales, Saint-Germain-en-Laye, France

Subjected to these double limitations of space and time and to the flickering illumination of an artificial light source, Palaeolithic cave paintings live on only in the memory of those who are familiar with them or in the immediate experience of those who first come upon them. They are outside and apart from normal life, belonging entirely and definitively to the realm of the imagination.

Apart from this physically and symbolically isolated parietal art, Palaeolithic art exists in the form of many artefacts: paintings and engravings done on flat pieces of stone or bone or on the handles of weapons and tools, countless personal ornaments such as beads, pendants and bracelets, and statuettes carved in stone, ▸

▸ bone or ivory. All these objects, thousands of which have been found in many of the occupation sites in Europe that were inhabited in Palaeolithic times, from the early Aurignacian period around 35,000 years ago to the concurrent end of the Ice Ages and of the Magdalenian civilization, represent a vast iconography of symbols, fully integrated into everyday life. Easily transportable, they contributed to the development of exchanges and contacts, and to the propagation of ideas and myths.

Artistic unity . . .

The famous Gravettian "Venuses"—some hundred or so statuettes—found at occupation sites in south-western France, at Brassempouy (Landes) and Lespugue (Haute-Garonne) for example, and as far away as the plains of Russia, at Kostienki or Avdeyevo, attest to a certain degree of unity of conception and styles that were the same or similar from end to end of Europe for four to five millennia.

In all forms of rock art, in Brazil or Australia, central India, the south-western United States, the Middle East, southern Africa or the Sahara, the paintings or engravings combine three major categories of graphic representation: geometrical figures or abstract signs (i.e. signs with no explicit figurative reference), animals, and human figures.

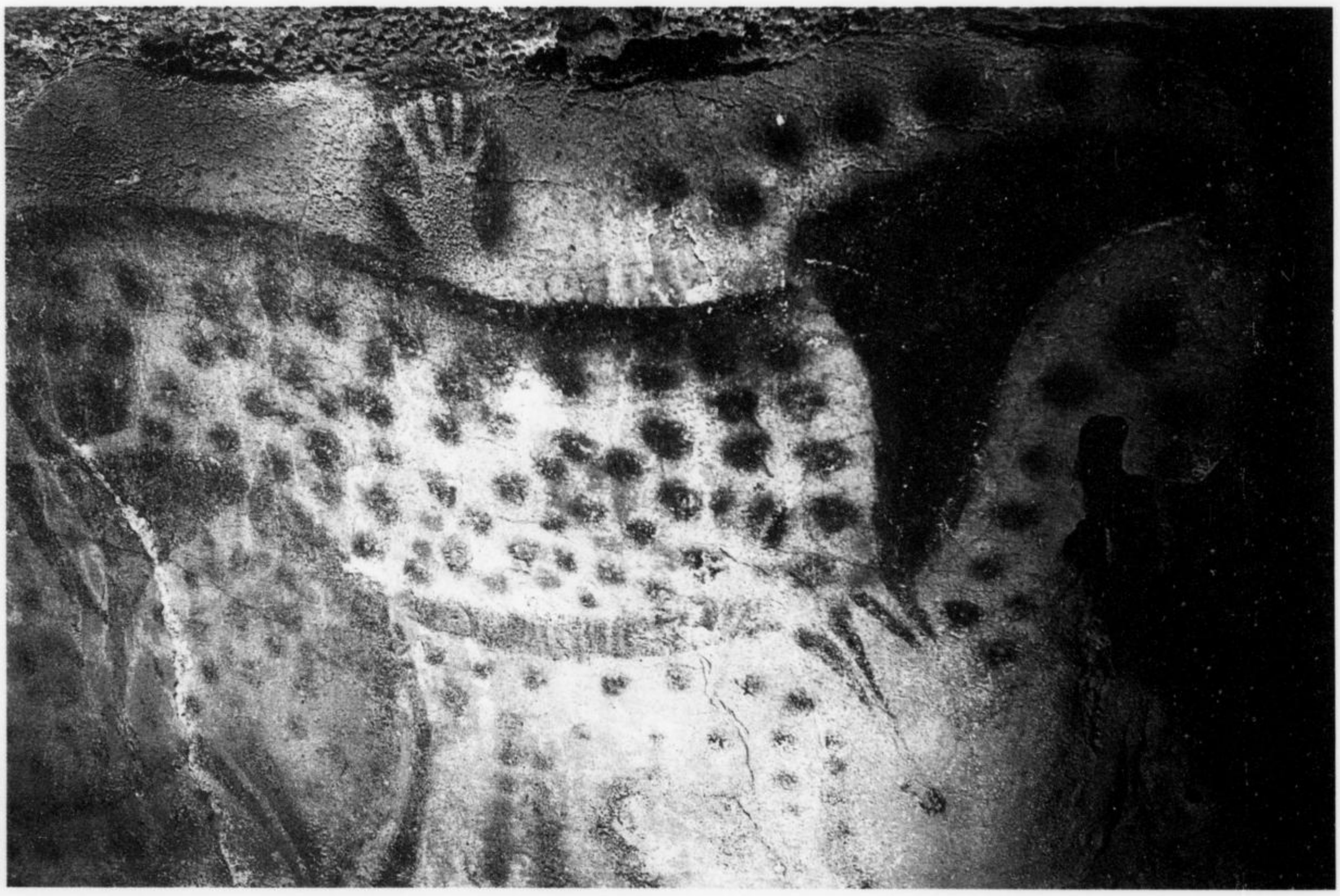
Even when sketchily executed or stylized, the representation of animals is usually naturalistic and is sometimes so accurate that the species represented can be identified, for example the Magdalenian artists' salmon, the Bushmen's Cape eland (*Taurotragus oryx*), the Palaeoindians' armadillo, or the giraffes and ostriches of the Neolithic artists of the Sahara. Conversely, the representations of the human figure are treated with a freedom that is sometimes pushed to such extremes as to make them almost indecipherable, as in the case of the painted stick figures in certain rock shelters in Brazil, which have little additions at either end that could be the head and the limbs. Profiles and silhouettes are often given zoomorphic features in many cultures, and it is just as common, in rock art of all periods, for the human figure (as regards the head, hands and sexual organs, and more rarely the feet) to be segmented.

Within the limitless range of painted and engraved signs to be found everywhere in the world (dots, circles, rectangles, etc.), there are innumerable points of convergence, which is not to say that the dots painted by a Palaeolithic artist necessarily carried the same meaning as those done by Palaeoindians.

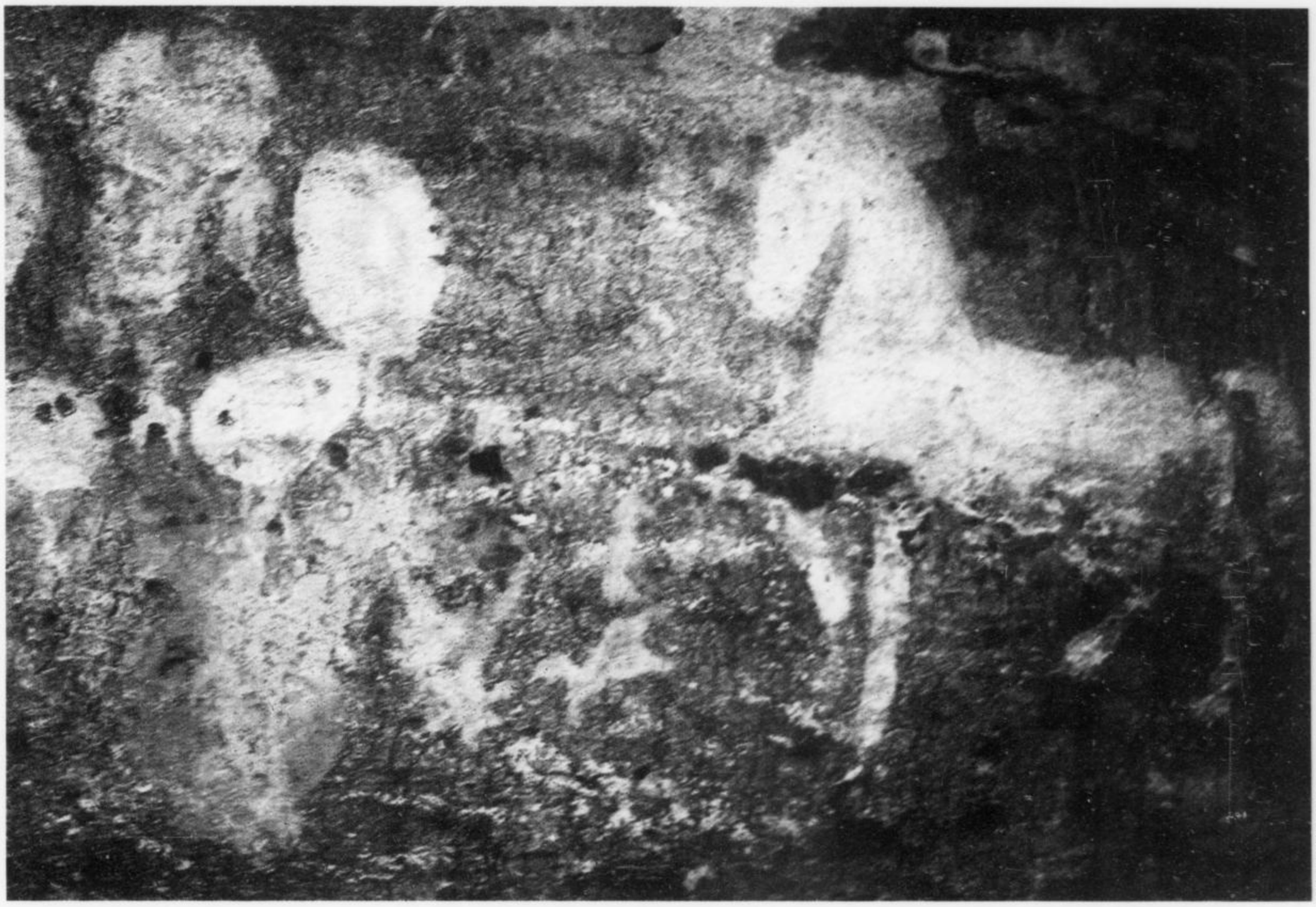
Another constant is the absence of any representations of plants, fruits, flowers or landscapes.

A further point to be stressed is the uniformity of prehistoric artistic techniques, local

This horse has been painted on a rock face naturally suggesting the shape of the animal in profile and is surrounded by large blobs of paint and stencilled outlines of hands. Pech-Merle cave, Lot (France), Aurignacian period (35,000-25,000 years ago).



© Charles Lénars, Paris



© Monique Pietri, Paris

Figure of a horse (on right) at Bhimbetka, Madhya Pradesh (India), where there are over 500 small caves and rock shelters decorated with paintings (2000 B.C.).

variations being of relatively minor importance. Drawings and paintings were done using mineral pigments, mainly ochres and manganese oxides, or charcoal. Incised engravings and pecked outlines were always made with hammer or blade tools fashioned from stone harder than that of the surface being worked, which was usually sandstone or limestone.

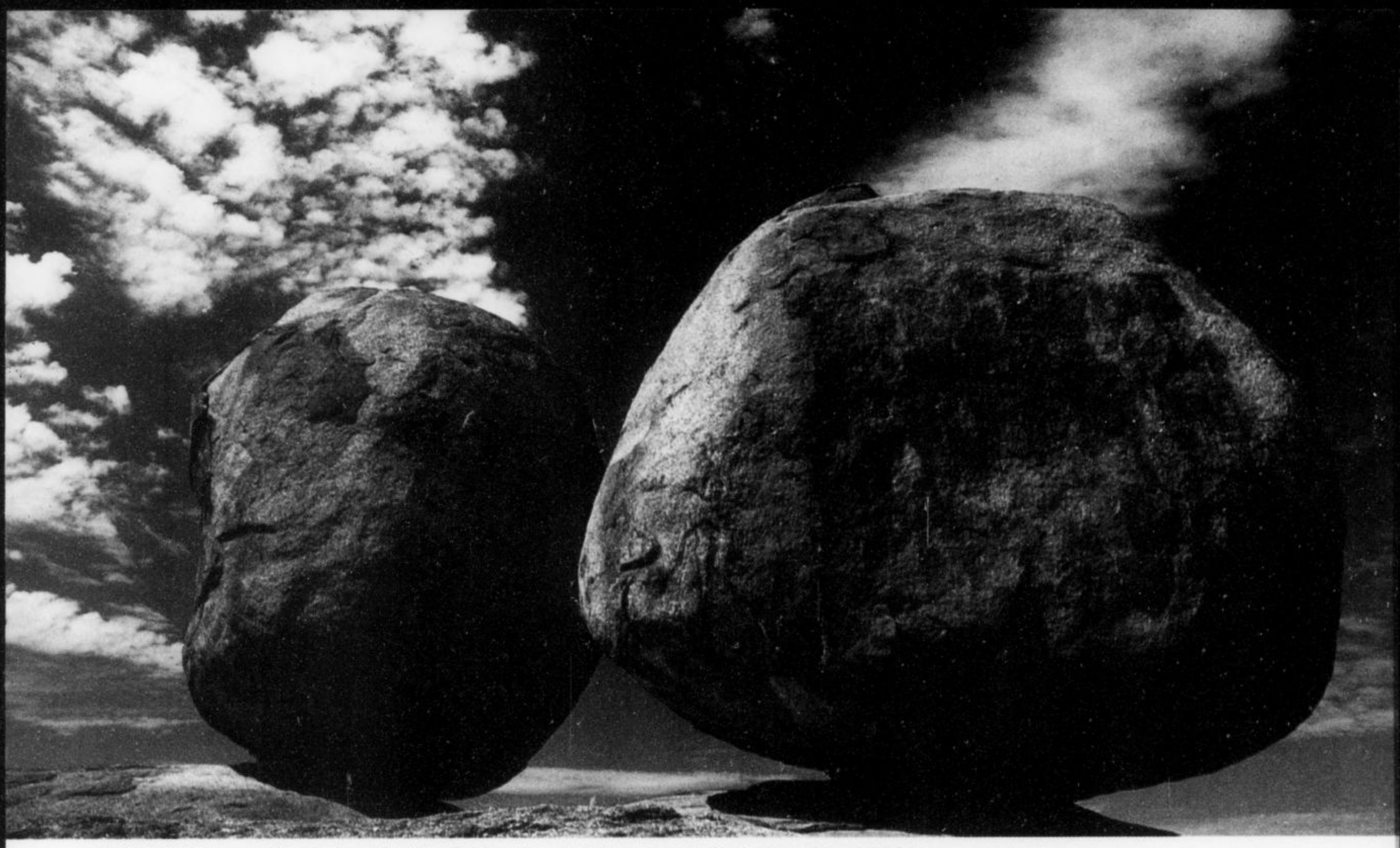
This identity of subjects and techniques in prehistoric art, which reflects the relative uniformity of entirely nature-oriented prehistoric ways of life and economies, should not, however, disguise the fact of its remarkable diversity of symbolism.

. . . and diversity of symbolism

The choice of subjects and their arrangement in space in fact create a specific symbolism that varies from one culture and one era to another. Neighbouring Magdalenian caves in France (Font-de-Gaume, Combarelles, Bernifal and Rouffignac, all in the Dordogne), for instance, feature a common "tectiform" or roof-shaped design not found in other Magdalenian caves, although their animal subject-matter is very different. Comparative analysis of rock shelters in the Tassili-N'Ajjer, in the Algerian Sahara, and in the Drakensberg mountains of South Africa reveals analogous differences, and this phenomenon is repeated from site to site, even when there are hundreds of shelters on the same site, as at Bhimbetka in central India.

Within this widespread semantic diversity, it is possible to distinguish two main trends, one towards pure symbolism and the other narrative in character or tending towards a certain degree of realism. Generally speaking, Palaeolithic parietal art (and artefacts) represent symbolic arrangements in which there is no discernible link between the juxtaposed and/or superimposed subjects, figurative or non-figurative. Horses, bison, mammoths, dots, rectangles, club shapes and human figures appear side by side, for no apparent reason other than the artists' own coded languages.

These main similarities and differences illustrate both the unity and the diversity of the prehistoric arts practised by *Homo sapiens sapiens* in various parts of the world, thirty or forty millennia ago in the case of the oldest examples, reflecting the basic links that exist between cultures, economies and their forms of graphic expression. The ability to express, to symbolize, an imaginary universe through the use of highly diverse systems of symbolic conventions and norms reflects the unique cultural characteristics of human communities and the specificity of their languages and customs, their beliefs, their myths and their gods. ■



Devil's Marbles, near Alice Springs (Northern Territory), regarded as a sacred site by Australian aborigines. © Stanislas Fautré/Ask Images, Paris

'For Australian Aborigines, rock painting is a title to their land'

Tim Fox talks to three Australian Aborigines invited to a UNESCO Forum on rock art

The Aborigines of Australia have always been hunter-gatherers, living in harmony with their surroundings. They believe that through ritual they help sustain the cycles of the natural world and that they are as much a part of nature as the wind, the rain and the soil. Understanding nature's secrets is a lifetime process, completely revealed only to tribal or clan elders.

Art for the Aborigines is the expression of present-day life, that is, a life that has been considered in the present tense since the beginning of time. Theirs is both the oldest and the youngest continuous civilization in the world, the oldest as attested to by the dating process called thermoluminescence; and the youngest because the practices depicted by rock paintings are still a part of Aboriginal culture to this very day.

According to the Aborigines, what is etched in or painted onto stone is the expression of the world's immutable laws, which emerged from the Dream Time, the gelatinous, amorphous time before the world emerged in the form we know today. These laws were placed there by ancestors and were until recently only for the eyes and understanding of a few initiates, the elders who have demonstrated their worthiness to know.

In June 1997 three elders and a young disciple of the Ngarinyin community left their native Kimberley Plateau in Australia's remote northwest and travelled to Europe to exhibit photographs of their sacred rock drawings and explain what the drawings meant. By this act, which not so many years ago would have been punishable by death, they sought to protect their access to their sacred sites against pressure from cattle-grazing, mining companies, tourists and souvenir hunters.

Without immediate contact with their lands, the Ngarinyin people cease to exist, for they are an integral part of the land, and the land is an integral part of them. If they do not actively maintain the land, the Aborigines believe it will cease to sustain life just as they will cease to exist if they are removed from it. This is why they had asked a painter/film-maker friend, Jeff Doring, to record on film some of their rock drawings so that the outside world could learn of their existence and understand the ways in which they bind Aborigines to their land.

The role of delegation leader seemed to fall to David Mowaljarlai, who has perhaps had the most extensive contact with Westerners through his many encounters with ethnologists and anthropologists and the many conferences on Aborigines he has attended in Australia. Paddy Wamma is a walking encyclopaedia of the plants found on the Kimberley Plateau and their medicinal, practical and nutritional applications. Paddy

Neowarra is president of the Ngarinyin Aboriginal Corporation and People (N.A.C.) and a firm believer that traditional law must rule in all aspects of social life and predominate in deciding land rights. Even when asked direct questions, the youngest of the four, Jason Ninowatt, deferred to the older men, who answered for him protectively. The group of four was accompanied by Jeff Doring and anthropologist Tony Redmond, who often clarified or provided background to points made by the Aborigines.

■ **Why this reversal of the age-old practice of keeping the meaning of the rock drawings a secret?**

David Mowaljarlai: Our paintings are our title to the land. If we lose our title, the paintings are empty. It's as simple as that. Besides we are not revealing all the secrets. Not the most essential ones. We are grateful to UNESCO for inviting us to tell our story. We don't normally travel so far from our land. We are under heavy pressure from pastoralists, mining companies and tour operators, who are trying to block us from our land. They are trying to extinguish our Native Title.

■ **What Is Native Title?**

Tony Redmond: It's a concept initiated by Australia's Northern Territory when it passed the Aboriginal Land Rights Act in 1976. The Act gave Aboriginal people inalienable freehold title to all Aboriginal reserves and a mechanism by which they could claim vacant Crown Land. Claimants have to be able to demonstrate traditional ownership of the land, and claims are heard by an Aboriginal Land Commissioner. Theoretically, Aboriginal landowners are able to limit incursion onto their land for mineral exploration or commercial development. But it is proving very hard to enforce.

D.M.: And some people—mining companies, pastoralists and the like—are still trying to deny us our rights by saying we can't prove that we are the traditional owners of the land. But we can. There are the rock drawings.

■ **What do the rock drawings prove?**

Jeff Doring: Rock art is a visual document. It is the "written" law in Aboriginal terms. The information in the drawings and the stone arrangement are totally explicit. White man's law changes from year to year, but these drawings never change. The illustration of one man passing an object to another, for example, is never modified, and it has been there, as far as the Aborigines are concerned, forever. And for the Aborigines it has the force of law.

■ **Well what, for example, does the drawing of a man passing an object to another man mean?**

D.M.: *Wunan*, the act of sharing.

P. W.: The *wunan* law works for everybody. Everything has always been shared by everybody. No one lives outside the chain. Everyone—you, me, everyone—is inside *wunan*. Animals, things, birds, everything, are all part of the *wunan* law.

It all started at the stone *wunan* table. It's the stone table that guides us. All our people gathered here to set rules and make laws. All the clans came from the four corners of the region to establish the *wunan* law. They talked and agreed how the land should be shared out and where the sacred places should be. All the men of the *wunan* law formed a line. No one was left out. We divided up the land. No one was left out; no one forgotten.

They made a big cake with the fruit of the *gulangi*. "We have to create a rule and establish a law," they said. "It is our life, this tree before us." They ate the cake piece by piece. There was enough for everyone. But the emu grew impatient for his share. He waited on the crest of the hill until he felt he'd waited long enough. Then he came down to get a piece. "No," they said, "you come from the rising sun. You've got a long time to wait yet for your share." So he shouted and stole the cake. They tried to talk him out of taking the cake, but he would not be swayed and ran away.

The emu ran faster than any other animal. The ground shook as he ran. All the birds tried to catch him, but he was too fast. So they went to the *wowara*, pigeons with bronze-coloured wings. "You are fast runners," they said. "You are the only ones who can catch the emu." Just then the *wowara* were honing the tips of their spears. They agreed and set out after the emu. They followed his tracks and finally caught up with him. He was punished because he had transgressed the law, as are all those today who follow in his footsteps. If you look up at the Milky Way you can see him looking back over his shoulder at the spear sticking in his back which he can never pull out because his arm is too short. ■

Dating of various examples of rock art in Australia confirms that some of them are over 20,000 years old. Below, a decorated cave at Keep River, near Kununura, Northern Territory. Right, detail of drawings on the cave roof.

© Stanislas Fautré/Ask Images, Paris

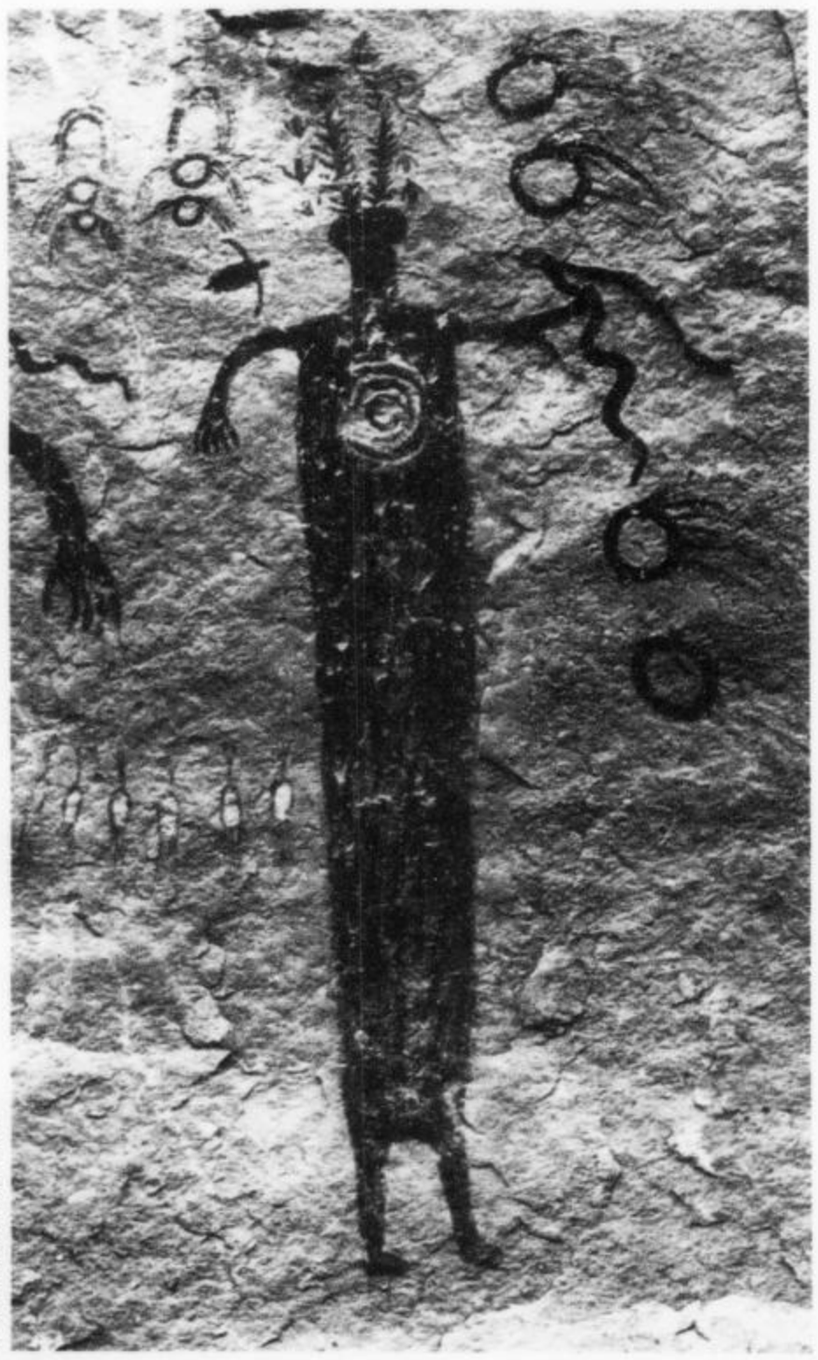
The shaman's journey

BY JEAN CLOTTES

Shamanism may provide a clue to the meaning of rock art

With very few exceptions (in some parts of Australia, for example) rock art all over the world is a fossil art. Its creators disappeared long ago, and with them went the myths and beliefs depicted in their rock paintings and engravings. Research can thus only be based on the art of the last two or three centuries when various peoples in the Americas, Africa and Australia still regularly painted on the walls of rock shelters. This approach is not without dangers, however. Neither the reported evidence nor its interpretation is always reliable. Furthermore, there is no guarantee that a group of nineteenth-century Aborigines living in a particular area shared the same beliefs as their ancestors who produced rock art in the same region several thousand years earlier. Comparative ethnology—extrapolating practices noted in one place and context to other world regions—should be practised with extreme caution, in a very general way, taking into consideration some universal features of human thinking and without hoping to come up with complete, detailed explanations that can be applied everywhere.

The term shamanism, first used to describe Siberian populations, has come to include beliefs and practices with a common basis found, even today, among many peoples in the world. Some of the many characteristics of shamanistic systems are fundamental and widespread.[1] Here we shall examine three of them.



© Jean Clottes, Foix, France

Left, shaman figure holding a snake, and various signs.

Other worlds

The first is a belief in a layered universe with several superposed or parallel worlds. According to this belief, the events in our world, the world we live in, are directly conditioned by the influence of powers living in one or another of the other worlds. The second feature is the belief that certain individuals can in certain circumstances directly make contact with the(se) other world(s) and in this way influence events in our world. They usually do this for practical reasons—to heal the sick or restore a lost harmony, to create good conditions for hunting, to bring rain to dry areas, or, more rarely, for evil purposes. The third characteristic is that contact with the other world is made directly, in one direction or another, through a visit by auxiliary spirits, often in animal form, which come to the shaman or towards which he goes. This will

© Jean Clottes, Foix, France

The walls of this shelter at Pleito Creek, California (U.S.A.) were covered with vividly coloured paintings of geometric figures, probably from trance visions.

often be an occasion for identification between the shaman and the spirit, or a belief in a total or partial transformation of the man into an animal. If the shaman's auxiliary spirit is a grizzly bear, identification between the human and the grizzly is total. A shaman can also send his soul into the other world to meet spirits and obtain their protection and help by going into a trance, sometimes during collective ceremonies, sometimes alone.

Ethnologists consider that shamanism is often found in egalitarian societies, usually of hunter-gatherers, although hunter-gatherer societies are not all shamanistic. Nor are these the only societies where shamanistic practices are found.

The fact that shamanism is found the world over is not of course due to direct or indirect contact between distant populations. The ultimate reason may be, at least partially, rooted in the inevitable need to rationalize and use the altered states of consciousness that are part of the human nervous system and appear in one form or another in every society. Certain people have been subject to hallucinations and visions, everywhere and at all times, for reasons as varied as the phenomena themselves. These experiences may be due to drugs or to certain pathological states, fasting, isolation, darkness, suffering, intense concentration, or throbbing, recurrent sounds. Rationalist cultures like ours disapprove of these phenomena and consider that psychiatrists (for spontaneous hallucinations) or the police (for hallucinogenic drugs) should deal with them. In others visionaries are regarded as being in contact with otherworldly powers and therefore become spiritual leaders, prophets or shamans.

This does not mean that they will necessarily record their visions on rocks. But in some cases they have done so, and what is more the ethnographic material collected by researchers in recent decades reveals many sim- ▸

▸ ilarities in the ways that visionaries think and act. These convergences are due to the fact that rock art is the embodiment of similar fundamental beliefs or conceptual frameworks. These have to do with the sites where the art was made, the themes depicted, and the reasons for this form of art.

Decorated rock shelters are often regarded as two-way "doors" between the real world and the other world. Spirits can emerge from them and it is possible to pass through them into the world beyond and meet spirits. Such places are also propitious for experiencing visions. Anyone wanting to be visited by a helpful

© Jean Clottes, Foix, France

Human figures, probably shamans. Little Petroglyph Canyon, California (United States).

© Jean Clottes, Foix, France

Three line drawings: Above left, grizzly bear (Tule River Reservation, California, U.S.A.). The bear's facial secretions recall the nose-bleeds sometimes suffered by shamans during the trance state (after D. Whitley). Above, hallucinatory figure with bow and arrows (Drakensberg Mountains, Natal, South Africa; after D. Lewis-Williams). Above right, rain-maker shamans capturing a rain animal (South Lesotho, recorded by J. M. Orpen in 1874; after D. Lewis-Williams).

spirit or enter the world of the spirits by going into a trance will go in solitude, which favours these encounters, to the foot of decorated walls. When we enter this other world, whether it is below or parallel to our own, we do so through a tunnel protected by animal guardians. In California, these were bears or rattlesnakes.

The images themselves were charged with power—they were painted one over the other on the same walls and each new work drew from and added to the accumulated power of those beneath. Certain dominant themes recur, differing from region to region. In the Drakensberg Mountains, South Africa, elands predominate. In the Coso mountains of central California, big-horned sheep are the animals most commonly depicted since they were associated with rain and rain was vital in this desert area. These distinctive local features illustrate the choices and beliefs of the creators and users of this art. Part-human part-animal figures also appear. These are creatures seen during the shamanistic journey or as a result of the shaman's transformation.

The purpose of rock art was often to depict visions after they had been experienced. David Whitley, who has studied rock art in the southwest of the United States,[2] considers that if the Nevada and California visionaries had not drawn their visions, they would have "lost" them and died as a result. On other occasions, the shaman's supernatural journey was depicted metaphorically. Death, for example, was a metaphor for a trance. In California's Coso mountains, "killing a big-horned sheep", the rain animal, meant that the shaman was going to the other world to bring back rain. The metaphor of death for a trance and for sexual relations ("little death") was common. Other metaphors were less common and remind us of the impossibility of grasping the specific meaning and nuances of art without direct help.

Rock art could also depict something other than the visions of a trance and still be linked to a shamanistic vision of the world. David Whitely reports, for example, that until the end of the last century female puberty rites included several days of isolation, instruction in maternity taboos, fasting and various ceremonies, and eating native tobacco to provoke hallucinations during which the girls met an animal spirit, usually a rattlesnake. Afterwards, they ran to a painted shelter called the Shaman's House, and drew their hands on its walls, positively or negatively, with red paint (a colour associated with young girls) to show that they had "touched" the supernatural.

Bridging two worlds

David Lewis-WIlliams, a South African researcher who has spent years studying the paintings and beliefs of the San Bushmen of his country, is behind much current research on shamanism and rock art.[3] Before him, several authors had explored this field but without great success, perhaps due to a lack of a ▸

sufficiently rigorous approach. Following his work, undeniable links with shamanism have been established between rock art images produced by cultures in different parts of the world, especially throughout southern Africa and in North and South America.[4] It is even likely that much European palaeolithic art, or "cave art" originates in shamanistic practices.

This hypothesis, which is not a complete or exclusive explanation but an explanatory framework, is based on several observations. For more than 20,000 years, deep caves were used not as dwellings but for drawings. Those who went into them went into their deepest recesses. All over the world the underground world has always been regarded an other-world, the realm of spirits and of the dead. Penetrating into the depths of these caves therefore was certainly not a simple matter of exploration. Palaeolithic people knew that they were in the realm of spirits, and expected to meet spirits in these caves. The flickering light of their torches brought the walls to life and they saw animal shapes on them. We know this because they very often used the more or less suggestive natural relief of the walls, which acted as a kind of permeable veil between this world and the other-world. Many figures were also painted or engraved where there were fissures, gaps or openings in the walls, as if animals entered or left the cave at these points. In addition, many speleologists describe the hallucinatory effect of caves, where cold, humidity, darkness and the absence of all sensory references encourage visions. Caves could therefore play a dual role: help produce altered states of consciousness, i.e. visions, and communicate with spirits through the cave wall.[5]

A shaman with antelope head and feet touching the hindquarters of a dying eland in this metaphorical representation of a trance (Drakensberg Mountains, Natal, South Africa).

© Jean Clottes, Foix, France

It thus seems extremely likely that much palaeolithic art was created in a shamanistic framework.[6] This does not mean, of course, that all the images of this art are the result of visions or that they all serve the same purpose. Human imagination and creativity are limitless and traditional thinking is never simple. The same holds true for the world's open-air art. Some of it, in America, Africa, and perhaps elsewhere, certainly originates in shamanistic practices. We cannot, however, impose this model on all prehistoric rock art irrespective of its ethnological context. It would only be justified to do so after making a thorough, critical analysis of all the elements of the rock art concerned. ■

1. Michel Perrin, *Le chamanisme*, Paris, Presses Universitaires de France ("Que sais-je?" series) 1995.
2. David Whitley, *A Guide to Rock Art Sites. Southern California and Southern Nevada*. Missoula, Mountain Press Publishing Co., 1996.
3. David Lewis-Williams and T. Dowson, "The Signs of all Times. Entoptic Phenomena in Upper Paleolithic Art," *Current Anthropology*, 29, 2, pp. 201-245.
4. S.-A. Turpin (editor), *Shamanism and Rock Art in North America*, San Antonio, Rock Art Foundation, Inc., Special Publication 1, 1994.
5. Jean Clottes and David Lewis-Williams, *Les chamanes de la préhistoire. Transe et magie dans les grottes ornées*, Paris, Le Seuil publishers, 1996.
6. Jean Clottes and David Lewis-Williams, "Les chamanes des cavernes," *Archéologia*, no. 336, 1997, pp. 30-41.

© Jean Clottes, Foix, France

An endangered art

BY FRANÇOIS SOLEILHAVOUP

An example of recent vandalism: this superb shamanic figure at Black Dragon Canyon, Utah (United States), was "enhanced" with chalk by tourists so that they could take better photographs.

Rock art, whether the kind found deep inside caves or out in the open, constitutes a vital feature of the history of humanity. Fragile and thus exceptionally precious, its survival bears witness to the ancient human urge to leave footsteps in the sands of time. That urge, which we still feel, is now linked with a duty, the duty of ensuring that such art is passed on to future generations. If this duty of conservation is to be effectively performed, there must be a code of ethics applicable to research, both on the individual level of the researcher and on the collective level of institutions, and a new approach to heritage education.

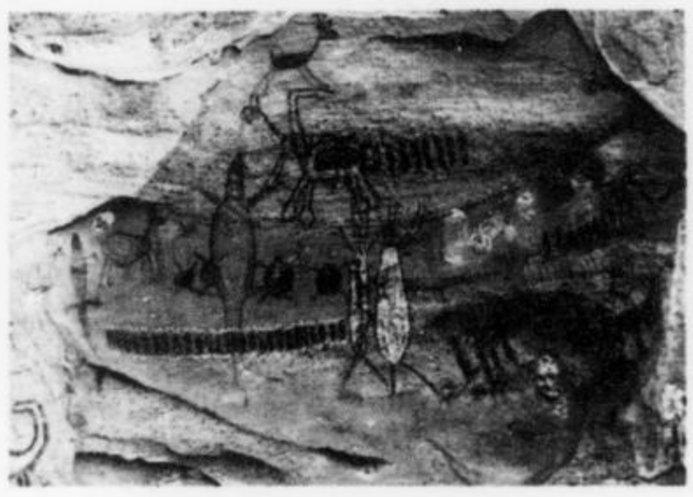
What can be done to stop the deterioration of rock art?

Attitudes to rock art were for many years dominated by leading scientists schooled in the great traditions of history and classical archaeology, and attention was accordingly focused more upon questions of interpretation than on the problems of conservation. Scholars such as these thought the most important thing was to locate, record and make explanatory comments on the works in question, and were less concerned about their actual survival. This is no longer the case. Everywhere in the world, rock art is suffering increasing deterioration. As we now know, anything done to a rock surface upsets the delicate dynamic balance between the rock and the atmosphere, which in normal circumstances is regulated over time by environmental factors. The micro-organisms present in and on the rock can then proliferate and either damage the surface by producing mineral substances (biomineralization) or destroy it.

Open-air archives

Exposed to the air, any rock surface behaves as a device for recording environmental variations. With current laboratory techniques, it is possible to study the natural evolution of the climate and even to date the main stages of that evolution, but a thoughtless action, whether by a researcher or by a tourist, can destroy irreplaceable sources of information. Although it is sometimes essential to take microsamples, an ethical approach demands, both of the researcher and of any decent citizen, that they show proper respect for the work itself and for the natural setting of which it forms part.

As more and more of rock art's rich sources of information are discovered and recorded, a better understanding of the complex causes of damage or even destruction is emerging. In response to the increasingly rapid urbanization and industrialization that are profoundly modifying many natural landscapes, urgent on-site rescue and recording operations are being carried out, but the impact of the methods employed is not always properly assessed. The fact is that operations such as the wetting of prehistoric paintings at sites in an arid environment, the ▶



© P. Plailly/Eurelios, Paris

Three views of the 12,000-year-old rock paintings at Pedra Furada, Serra da Capivara, Piauí State (Brazil). Above, a rock face. Left, zoomorphic figures and signs. Right, small human figures surrounding animals.

▸ highlighting of engravings with chalk or even paint, the application of whitewash and the taking of casts with the aid of chemicals all bring about physical, chemical and microbiological changes in the paintings themselves and in the rock on which they have been executed.

Pleading recently in favour of conservation, the Australian specialist Robert G. Bednarik even urged that books on rock art which demonstrated direct-contact methods of recording should be withheld from publication.

It was with such ideas of conservation in mind that the first International Seminar on the Conservation of Paintings in the Open Air—held in Algiers and at the Tassili N'Ajjer, one of the prime World Heritage sites—was convened by UNESCO in 1978. Many such meetings have since been held, on all five continents.

The pros and cons of ecotourism

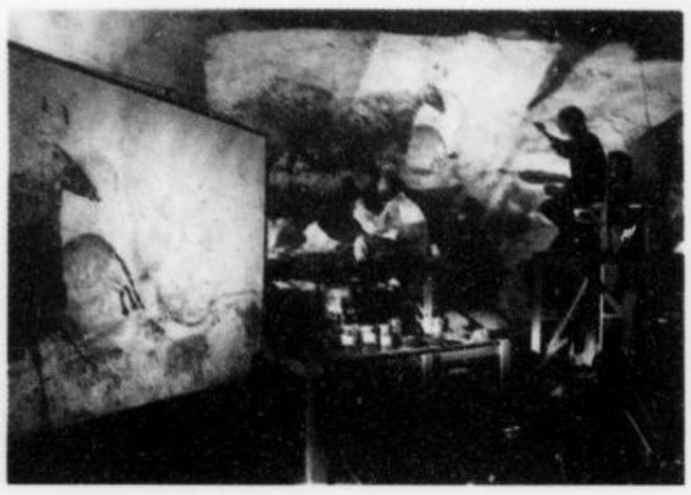
Rock art is part of the common heritage and should not be the jealously guarded preserve of a few specialists, but public interest in and admiration for it raises major problems. This is true both of the wealthy countries, where increased leisure time and cultural tourism help to step up the pressure on the environment, and of the poor countries, where the development of ecotourism has to serve economic purposes such as bringing in foreign currency and providing employment, and where natural sites are treated as consumer products.

The Manila Declaration on World Tourism indicates that modern tourism corresponds to a basic human right to rest and holidays, but it also points out that "in the practice of tourism, spiritual elements must take precedence over technical and material elements", those spiritual elements being "the total fulfilment of the human being, a constantly increasing contribution to education, equality of destiny of nations, the liberation of man in a spirit of respect for his identity and dignity, [and] the affirmation of the originality of cultures and respect for the moral heritage of peoples."

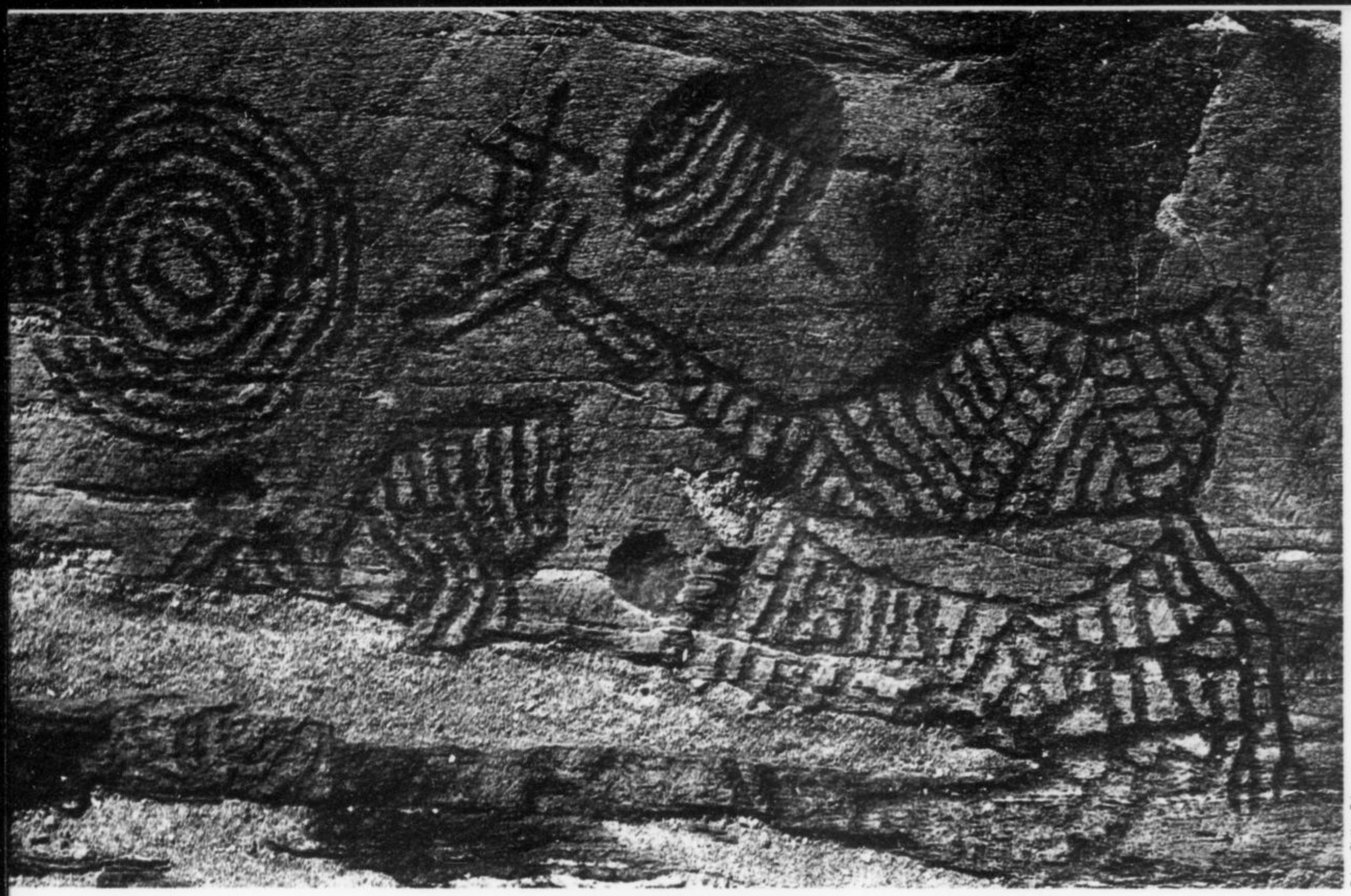
One may well wonder whether the principles enshrined in that Declaration are not being violated by the upsurge in organized tourism over the last twenty years, and whether the tour operators who offer visits to open-air rock-art sites anywhere in the world under the label of ecotourism and "green" or cultural tourism are not quite simply hijacking nature by putting a monetary value on it.

To take the case of national parks, the World Conservation Union (IUCN) defined them in 1969 as areas of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal and other effective means. At present, only 9 per cent of the dry land surface of the globe enjoys this status. In such places, priority should be given to the protection and conservation of the natural and cultural heritage, but, in response to understandable public curiosity but also for less honourable reasons wherein rivalry and conflicts of authority and interests are intermingled, natural parks and reserves are being visited by more and more people every year. Such mass tourism at the world's main heritage sites is causing their inexorable physical deterioration and a diminution of their essential spiritual dimension.

Creation of replicas of the decorated caves of Lascaux and Niaux (France) near to the original sites, This protective measure was undertaken after serious damage had been caused by the presence of large numbers of tourists in the caves, which are now closed to the public. Below left, a sculptor and a painter faithfully recreate the walls and paintings of Lascaux II from extremely precise photogrammetric records. Below and below right, an engraver and a painter at work at Niaux II.



© P. Plailly/Eurelios, Paris



© Jean Clottes, Foix

Some of the petroglyphs at the site of Ausevik (Norway) have been repainted to increase their effect and supposedly to protect them, although this practice actually causes the paintings to age more quickly. Other works have been left as they were.

These are difficult contradictions to resolve. While it is somewhat hypocritical to try and protect sites by keeping strict control over visitors' right to roam (so much more is sometimes declared out of bounds than is accessible that a good video cassette might seem a better bet than an actual visit), what is one to make of the suspect notion of an "integral reserve", which, by trying to create little islands of unspoilt nature, ends up establishing *de jure* two categories of nature, one where anything goes and another where everything is banned?

Freedom and responsibility

The present tendency to confuse culture with consumption in "leisure" activities poses a growing threat to the heritage. Anything that is consumed is, by definition, destroyed or at the very least loses much of its value; and "consumption" of the heritage in general and of rock art in particular is on the increase. As a result of too much machine-made pollution, the general public and some of the political decision-makers have developed a need for nature and a concern for the environment. Many states have adopted a responsible attitude to their heritage, but much needs to be done to rally individuals and the public at large to this cause and to raise their awareness.

This is why education is so important. From a very early age, children must learn from their parents, from their immediate social environment and from elementary school the basic attitudes and reflexes that make up life skills, as well as acquiring knowledge and learning self-respect and respect for others. It is up to schools to instil in them from a very early age the rudiments of the ethical code which they, as future citizens and members of the public and as potential interested amateurs or specialists, will adopt towards the natural and cultural heritage, so that a responsible form of freedom as regards that dual heritage may prevail. ■

These Bronze Age engravings at Tomskaya Pisanitsa in southern Siberia (Russia) have been disfigured by vandals who carved over them a date with a double ring around it.

© François Soleilhavoup, 1995, Paris

An open-air museum in the Sahara

BY AXEL AND ANNE-MICHELLE VAN ALBADA

Hunter-gatherers have left a vivid collection of petroglyphs on the Libyan plateau of Messak

"The rock art of the Sahara is one of humanity's most astonishing books of hours. There may be different, older ones, but there are few that are so beautiful or so fresh. It is charming as well as surprising, and it makes us think deeply about the enthralling message it has brought down to us."

Henri-Jean Hugot (*Le Sahara avant le désert*)

The Messak plateau in the central Sahara (Libyan Arab Jamahiriya) has been inhabited since the Old Stone Age. But it was probably only during a wet phase of the New Stone Age that groups of hunters and herdsmen decorated the walls of its oases with beautiful engravings. Unlike the Djebel Akakus and Tassili N'Ajjer regions elsewhere in the Sahara, which are rich in rock art, there are hardly any paintings on the Messak plateau and the few exceptions to this rule clearly originate from outside the area.

The petroglyphs found on the plateau can be dated by reference to differences in the nature and colour of the patinas that have formed on the rock surface. The most recent date from what is known as the camel era, which began some 2,000 years ago. Others executed nearby show horses, two-wheeled carts and warriors armed with spears and round shields, and may have been executed some time around 1500 B.C. An even older patina coats engravings of many small spotted Bovidae (animals of the ox family) that are somewhat crudely and flatly portrayed. Many ostriches and giraffes are also depicted in these engravings, suggesting that they were made by herders contemporary with the onset of a very dry period in the region towards 2000-3000 B.C.

These engravings are very different, particularly in terms of style, from the older engravings which constitute high-quality naturalistic art. They incorporate abstract signs and living creatures, and were doubtless intended to convey sophisticated ideas.

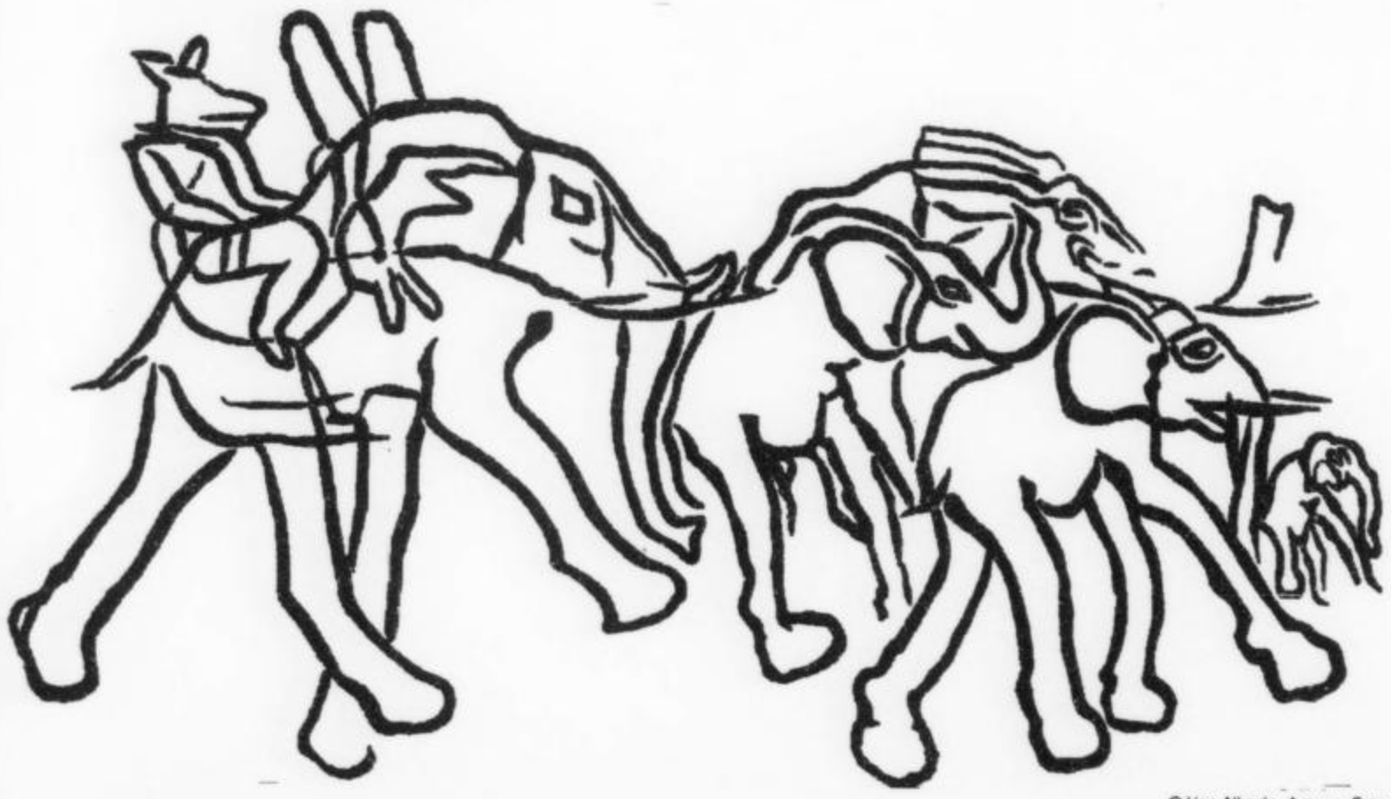
A hunter-gatherer society

It is possible to talk in terms of an area specific to a "Messak culture."

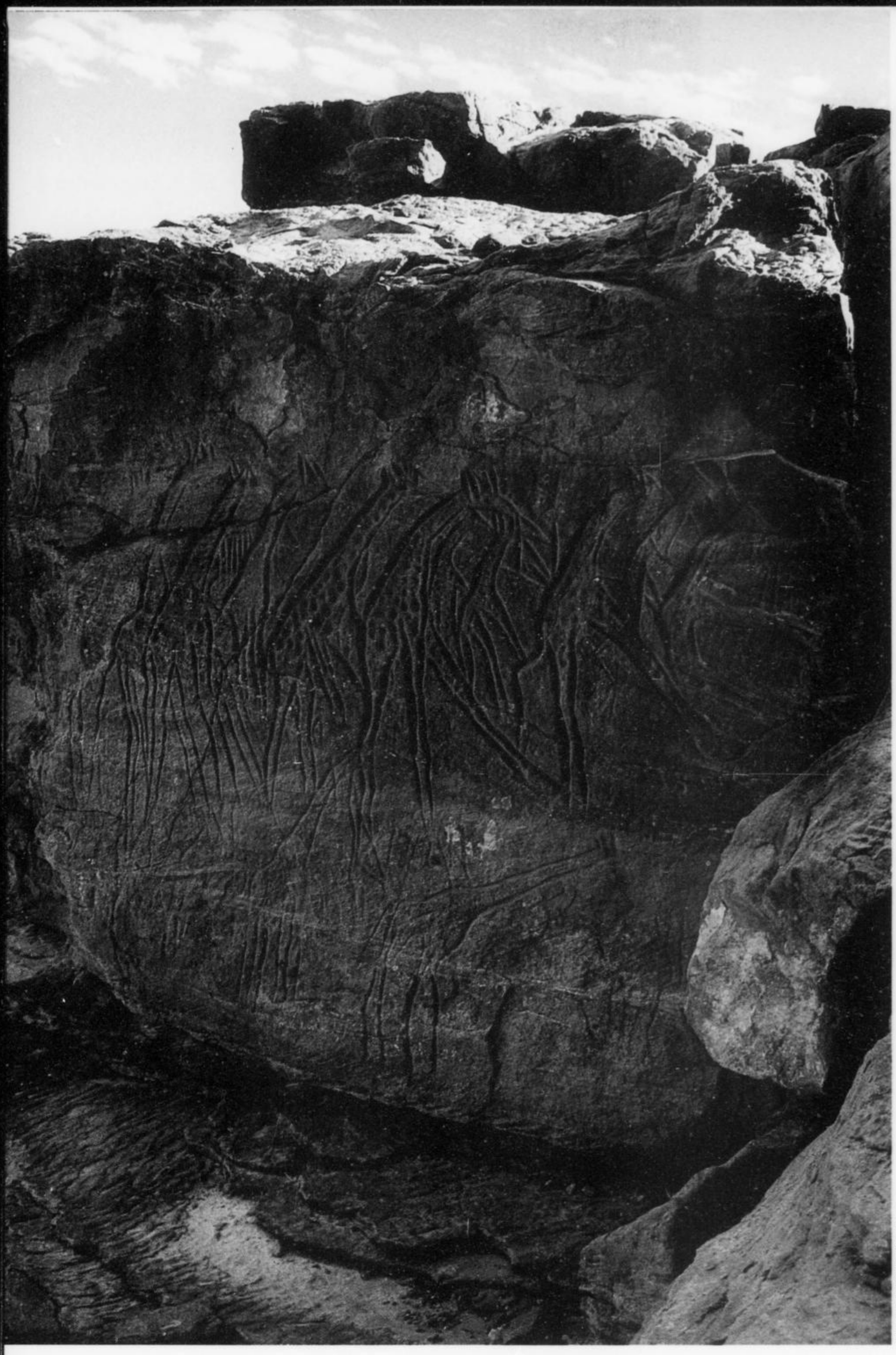
The engravings are striking first of all by virtue of the number and originality of the scenes, their rich contents, and by the techniques used to make them. Some are bas-reliefs where foreground and background are realistically depicted by fine hammering and partial polishing. A special "double line" technique emphasizes the impression of depth in some areas such as paws and muzzles.

Wild and domesticated animals are the principal theme. The impression of numbers or a herd is often created by a fan-shaped series of heads poised at different angles and gradually shading off into the background from a whole animal portrayed in detail in the foreground. The overall effect is striking and bespeaks a high degree of compositional talent. Different kinds of horns, often represented in one small herd, are an indication of diversity. At least three engravings show milking scenes. Milk was probably stored in skins or gourds slung between forked branches. Cattle were used as

A man with the head of a jackal or hunting dog returns from a rhinoceros hunt on the back of an elephant. Drawing of rock art figures at Wadi Imrawen in the Messak massif.



© Van Albada, Arzens, France



© Van Albada, Arzens, France

Herd of giraffe in movement on a promontory of the rich rock-art site at Wadi Issanghaten.

pack animals and occasionally as mounts. Highly ornate saddles and decorated horns suggest ritual celebrations.

Representations of human beings are not infrequent but seem to be connected with special events (hunting, rituals, symbolic scenes) rather than routine activities. The main hunting weapons include simple curved bows, hammers, throwing sticks (probably boomerangs) and a sort of hook or lasso for trapping ostriches by the neck. Ban-Barur, or hobbling stones (found in abundance on the plateau) used to immobilize wild animals appear in many engravings featuring aurochs, rhinoceroses, giraffes, ostriches, lions and donkeys. In some scenes, a braided tie seems to hold the animal's legs.

A few hieratic figures portrayed in great ▸

▸ detail give us some idea of the clothing worn by these people, including short pants and short-sleeved shirts. Some figures wear parallel cloth strips and a loincloth which is sometimes topped with a striped belt to which a pendant holding a triangular structure is attached. Short bulging tunics are also depicted. Some men are shown wearing a codpiece. Women usually wear full, almost ankle-length dresses and have conical hairstyles possibly constructed with plaits or braids. They often have heavy features and prominent noses, but they may be wearing face masks. These stereotyped women are usually shown with wild beasts or domesticated Bovidae.

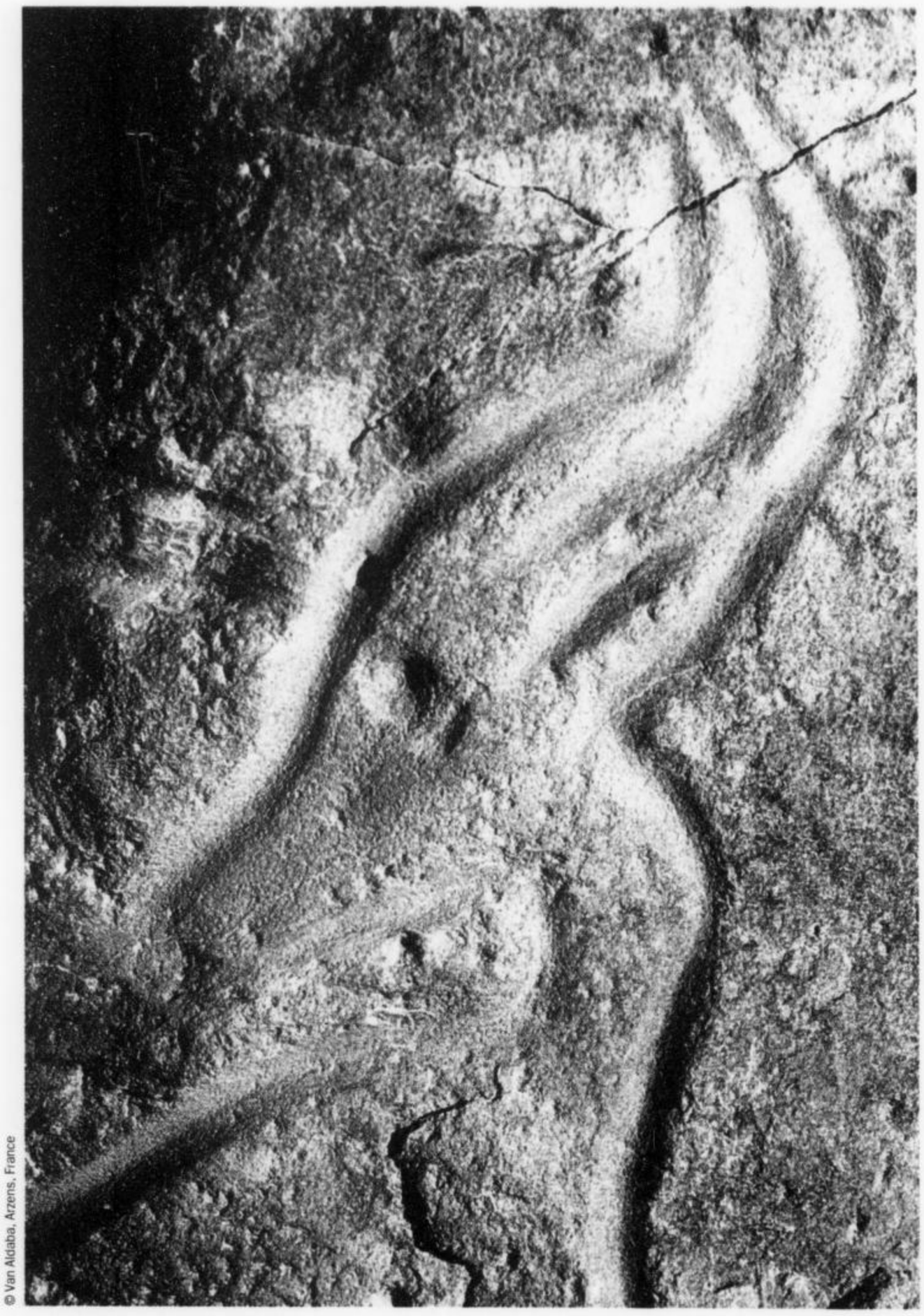
A rich array of beasts

The engravings are executed with such precision that some of the animals depicted can be identified with a fair degree of certainty. This particularly applies to the large, wild Bovidae, some of which have since become extinct. These animals either stand alone or are surrounded by archers who are usually small. In addition to several species of antelopes, there are three large undomesticated animals: the early buffalo, the aurochs and the African buffalo. The frequency with which aurochs and buffalo are portrayed indicates their importance in this area. Engravings representing aurochs trapped by a hobbling stone suggest attempts at domestication. Since this animal is the ancestor of the domesticated ox, this mountainous part of the Sahara may have been an important early centre of domestication.

Wild animals are abundant and carefully depicted. Elephants and rhinoceroses are often shown with their young in a range of dynamic, realistic poses. Hippopotami and crocodiles appear in a number of places where there may have been permanent watering holes or lakes in a wet climate. Today, there are only a handful of short-lived *gueltas* or watering holes, which do not fill annually but may in some cases hold water for more than six months. Fish are rarely depicted. There are many pictures of giraffes, whose nuptial parades are sensitively and gracefully shown. Their coats are sometimes shown by means of small cup marks that give a beautiful effect. Ostriches, donkeys, large and small felines (leopards, lions, jackals), and some wild fox-like canines also appear. A few specimens of warthogs can also be seen.

While this bestiary is limited to a small number of species, it is nonetheless representative of a biotope—a small area that supports its own distinctive community—probably a wooded savannah with permanent watering holes on the edge of the Murzuk dunes. After the unusually heavy rains of 1997, the Messak *gueltas* held thousands of cubic metres of water for several months and some of them even became lakes several hundred metres long—providing a glimpse of what was probably a common occurrence several thousand years ago.

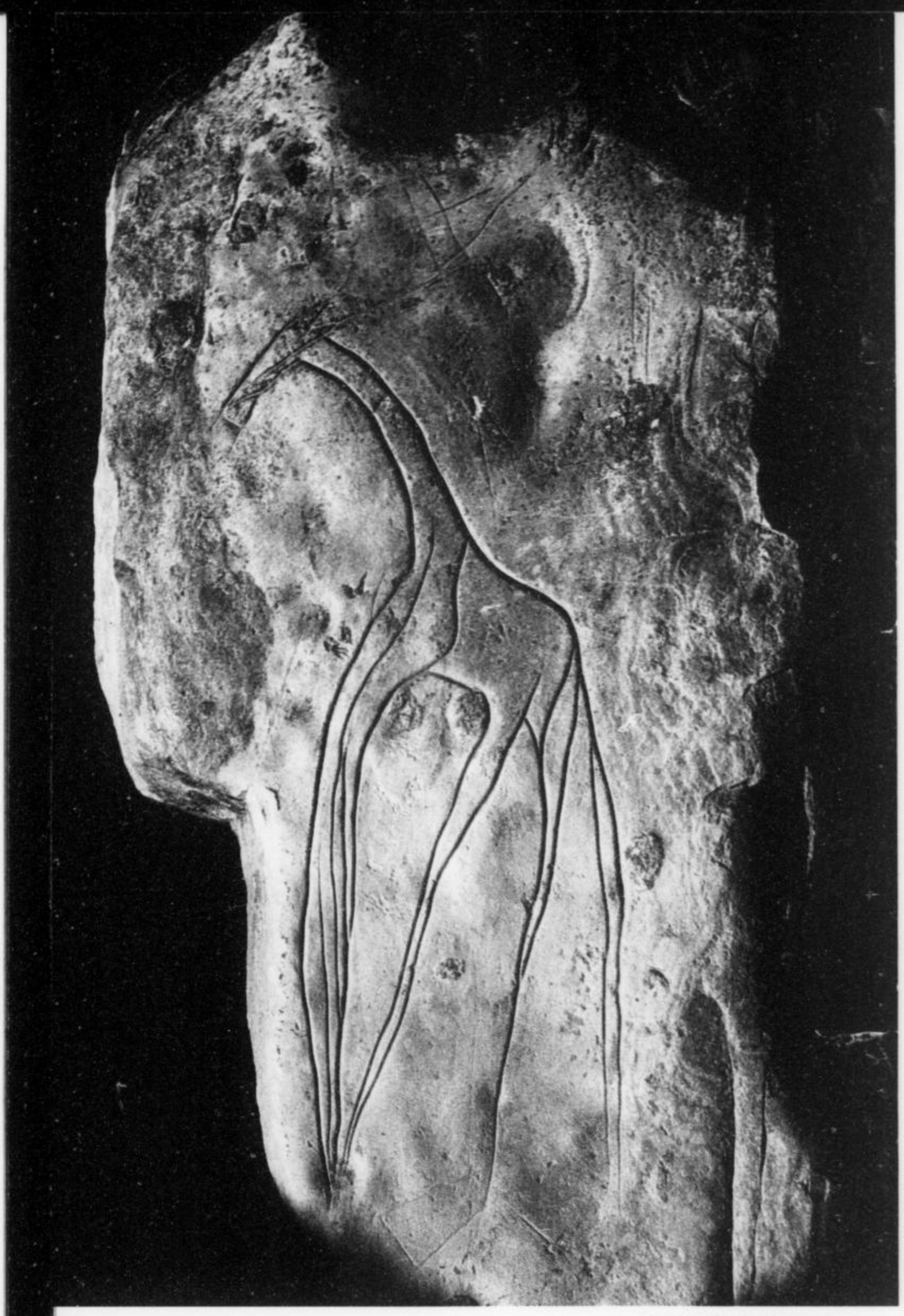
A naturalistically rendered gazelle's head turning to face backwards. (Wadi Bedis).



© Van Aldaba, Arzens, France

A fertile imagination

Some sandstone walls are adorned with surrealistic animals which reflect a highly original collective imagination. Fantastic hybrids—gazelle-headed ostriches, elephants with rhinoceros heads, a simian body with a hare's head—rub shoulders with other flights of fancy that astutely combine the lines of a giraffe, the



© Van Albada, Arzens, France

Small delicate figure of a giraffe on a slab of rock. Wadi Imrawen.

body of a rhinoceros and an ox's head. A few birds, probably mythical, are also shown.

The most original creatures are also the most common. More than 140 men with the heads of jackals or hyenas suggest the first glimmerings of a well-structured mythology. Their superhuman activities are directed at large wild animals. They attack and kill rhinos and aurochs with stone axes or clubs and then effortlessly carry them on their shoulders or under their arms, wearing a satisfied grin. Hanging from their belt is the head or some other kind of trophy from a rhino or in some cases an aurochs.

Their relationship with elephants is more subtle and complex. They stalk elephants aggressively, their lips curled back to give a ferocious display of teeth, and brandishing axes or clubs, but never seem to wound their prey. One outstanding engraving shows a jackal- or hyena-headed elephant driver astride a calm elephant which holds a small rhino pinned upside down beneath its thigh. Another shows a small jackal-headed man on the heels of a large pachyderm, catching and licking its fresh excrement.

A mysterious cosmogony

The absence of written sources makes it difficult to interpret this cosmogony. The figures described above all seem to belong to ritualized scenes in which composition and the attitudes of the figures are stereotyped. The role of masked men should probably be interpreted symbolically. A new reading of the animal representations might make it possible to identify traces of a specifically Messak cosmogony.

Any discussion of the engravings on the Messak plateau must address the hundreds of identical, abstract signs they depict, including oval cup marks and reticulated circles. A local interpretation associates these with sinking wells. There might be a generic link with water, or more generally, with some kind of fertility symbolism. These signs were certainly important, given their number, but their meaning nonetheless eludes us.

The existence of this surprising universe in the world's largest arid desert is certainly no accident. The cultural centres in these forgotten mountains are closely linked to the climatic past of the Saharan sub-continent. Their altitude and the moister climate of the early Holocene epoch (beginning around 10,000 years ago) fertilized the deep and silty earth where today the aridity and erosion of thousands of years have sterilized it.

The origins and histories of these cultures are still a mystery. We can, however, suppose that the Messak plateau along with other mountain ranges of the central Sahara was one of the centres of development of the New Stone Age. The high proportion of symbolic images left by the people who lived there should not veil the message of these open-air engravings, namely that the people of the Messak were above all hunters and herdsmen who were perfectly integrated into a living nature that they respected. ■

The authors would like to thank Messrs Mohammed Ibrahim Meshaï and Saad Salah Abdulaziz, curators of the antiquities of the Fezzan, for their kind assistance in revealing the full extent of this prehistoric heritage.

Rock art of sub-Saharan Africa: a thumbnail guide

BY OSAGA ODAK

Africa has a vast heritage of rock art which three main factors have helped to preserve: belief systems, inaccessibility, and secrecy.

The sites are generally located in highlands and comprise rock shelters, caves and smooth open rock surfaces. Most of the shelters with paintings are high on bush-covered hillsides, facing or overlooking plains, valleys or rivers. The painters seem to have preferred such locations because they commanded a wide view of the plains and of immediate surrounding areas which enabled them to watch game and sometimes, perhaps, hostile warring peoples. Hilltops were also suitable for camping, especially during the wet seasons, when the low lying plains would be flooded.

Most sites were accessible only to special groups of people at particular times, and there were strict taboos against visiting, cutting trees, herding or even collecting firewood from them. As a result their environment was left

Men running at full speed. Rock painting in the Matopo Hills (Zimbabwe).

© M. Huet/Hoa Qui, Paris

undisturbed. Most sites were inaccessible to villagers, and people who did manage to reach them were deterred by taboos from vandalizing the art. Most important of all, some sites were usually known only to elders and practitioners of rituals, who tried to keep their location secret.

Unfortunately, the situation has drastically changed. Belief systems that guarded the sites have broken down and are no longer respected. Population growth has stepped up demands on land for agricultural use, and since taboos no longer act as a deterrent, people encroach on the sites with impunity.

Distribution areas and themes

☛ **The Horn (Ethiopia, Eritrea, Jibouti, Somalia):** Paintings mainly depicting long horned humpless cattle (also found in Kenya on sites around Mount Elgon).

☛ **Sudan:** Painted rock shelters and caves in Dajo Hills South of Darfur. Depictions of wild animals and horses whose riders are armed with shields, and foot soldiers armed with shields and spears.

☛ **Zambia, Zimbabwe, South Africa:** Paintings of animals and humans; schematic designs such as parallel lines and concentric circles with lines radiating from the centre.

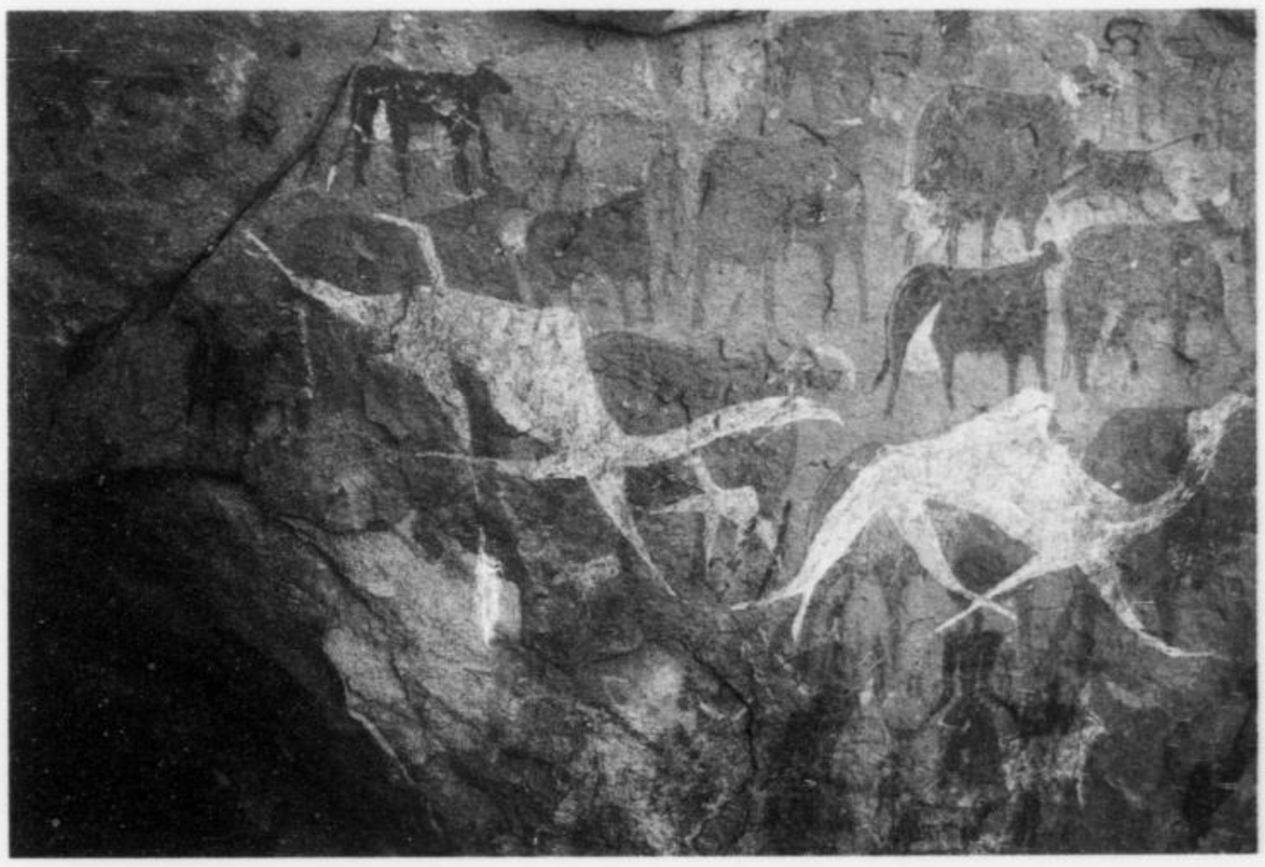
☛ **East Africa:** The richest area is in central Tanzania (Dodoma, especially Kondoa district, and Singida regions). Isolated concentrations of sites in Tanzania are found in the Masasi, Mbulu, Mwanza, Bukoba, Unyamwezi and Haida Plain areas. The Mwanza and Bukoba sites extend to include sites in the Kenya and Uganda sides of Lake Victoria Island.

☛ **Northern Kenya:** Engravings of wild animals (e.g. antelopes, gazelles, hippos, giraffes and rhinoceros) and domestic animals (e.g. camels, donkeys, cattle) and stylized humans. ■

Painting of men and animals. Drakensberg Mountains, Natal (South Africa).

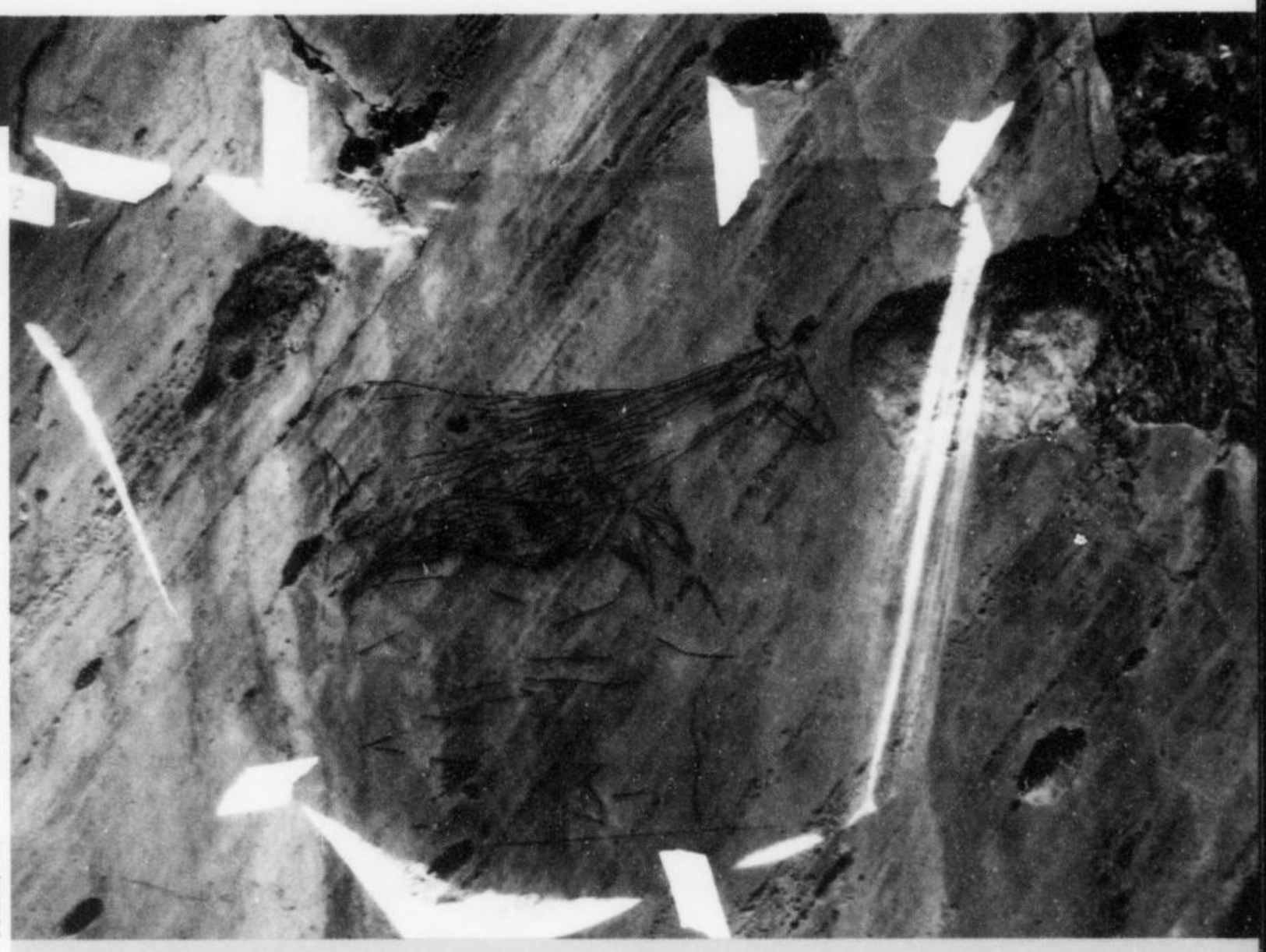
© Hervé Collart/Hoa Qui, Paris

Dromedaries and cattle, rock art of the Saharan plateaux of the Ennedi (Chad). The Saharan style extends as far east as part of the Horn of Africa and as far south as Mount Elgon (Kenya).



© Bruno Barbier/Hémisphères, Paris

The universality of rock art



© UNESCO, Paris

FOZ COA (Portugal) is an open-air rock art site at least 18,000 years old which extends over 15 km. This exceptional complex is threatened by the construction of a dam. A UNESCO mission visited the site and later published a report outlining the steps necessary to safeguard the engravings. Above, drawing of a Magdalenian-style horse at Foz Coa.

UNESCO is mandated by its Constitution to assure "the conservation and protection of the world's inheritance of works of art and monuments of history and science".

For fifty years UNESCO has therefore sought to encourage and promote international action designed to ensure that the physical and non-physical expressions of human creativity are considered as an indivisible whole by the international community. It is important that all these expressions should be respected as elements of the universal heritage, and conserved, studied and transmitted to future generations.

In accordance with its mission to aid its Member States, UNESCO has included in its priorities "The safeguard of rock art all over the world, particularly with regard to compiling an inventory of it, conserving it, training technicians, and promoting exchanges of knowledge and public information." These pursuits are a token of international recognition of the universal value of a fragile cultural heritage.

Rock art is a classic example of a universal art. These first known expressions of the sensibility and aesthetics of our distant ancestors are inscribed on rock surfaces in many world regions. From Australia to Africa, from Asia to the Americas and Europe, our prehistoric predecessors inscribed the places where they halted on their journeys, their shelters and their sanctuaries with works of art which stir our feelings and our admiration. Rock art is the only form of human cultural expression which has been practised without interruption from tens of thousands of years ago until the present day.

In its original cultural context, it was protected by the respect that surrounded it, just like the environment of which it formed part. Now, in shelters or on rocks in the open air, rock art is subject to all kinds of aggression from nature and from people. This precious art has today become a threatened heritage.

MARIE-JOSÉE THIEL
Cultural Heritage Division
UNESCO

Extracted from: *Le chemin secret des Ngarinyin du nord-ouest australien*, Paris, Muséum National d'Histoire Naturelle,
1977 © Pathway Project Pty Ltd 1997

■ FOR FURTHER INFORMATION:

Mme Marie-Josée Thiel
Cultural Heritage Division, Culture Sector
UNESCO, 1, rue Miollis, 75732 Paris Cedex, France
Tel: (33) (0)1 45 68 44 20
Fax: (33) (0)1 45 68 55 96
Telex: 204461 Paris

■ FURTHER READING

Rock Art, a universal cultural message, a bilingual (French/English) booklet by Jean Clottes, Paris, UNESCO/ICOMOS, 1997 (available free)

☛ The following issues of the *UNESCO Courier*:
The state of the world heritage, September 1997
Troglodytes, a hidden world, December 1995
☛ Articles:
"The rune-stones of Jelling", by Jens Boel (May 1996)
"The painted caves of Mogao", by José Serra Vega (December 1993)
"The rock art of Tassili n'Ajjer", by Caroline Haardt (July 1991)

■ TO SUBSCRIBE

to the quarterly periodicals *Museum International* and *The World Heritage Review*, please contact:
UNESCO Publishing,
1, rue Miollis, 75732 Paris Cedex 15, France
Tel: (33) (0)1 45 68 43 00
Fax: (33) (0)1 45 68 57 41
Website: http://www.unesco.org/publishing

ROCK ART ON THE WORLD HERITAGE LIST

(Sites and their years of inscription)

Algeria: Tassili n'Ajjer (1982)
Australia: Kakadu National Park (1981, 1987, 1992), Uluru-Kata Tjuta National Park (1987, 1994)
Brazil: Serra da Capivara National Park (1991)
Chile: Rapa Nui National Park (1995)
France: Decorated Grottoes of the Vézère Valley (1979)
Ireland: Archaeological Ensemble of the Bend of the Boyne (1993)
Italy: Rock Drawings in Valcamonica (1979)
Libyan Arab Jamahiriya: Rock Art Sites of Tadrart Acacus (1985)
Mexico: Rock Paintings of the Sierra de San Francisco (1993)
Norway: The Rock Art Site of Alta (1985)
Spain: Altamira Cave (1985)
Sweden: Rock Carvings in Tanum (1994)
U.S.A.: Mesa Verde (1978)

THE INTERNATIONAL COUNCIL ON MONUMENTS AND SITES AND THE INTERNATIONAL ROCK ART COMMITTEE

The International Council on Monuments and Sites (ICOMOS) is an international non-governmental organization that works to promote the application of theory, methodology and scientific techniques to the conservation, protection and enhancement of monuments and sites.

Objectives

- To bring together conservation specialists from all over the world and serve as a forum for professional dialogue and exchange
- To put its network of qualified professionals at the service of the international community
- To collect, evaluate and disseminate information on conservation principles, techniques and policies
- To co-operate with national and international authorities on the establishment of documentation centres specializing in conservation
- To work for the adoption and implementation of international conventions on the protection, conservation and enhancement of monuments and sites
- To participate in the organization of training programmes for conservation specialists on a world-wide scale.

The documentation centre

Working with UNESCO and the International Council of Museums (ICOM), the documentation centre covers all the regions of the world and all aspects of the preservation of monuments and sites. It is open to all researchers and institutions concerned. It can be reached by telephone or by e-mail and is open to the public on working days for consultation of reference works. It maintains a bibliographical database with more than 20,000 entries derived from its own resources.

International Newsletter on Rock Art

The International Rock Art Committee (CAR) of ICOMOS has for the past four years published an International Newsletter on World Rock Art (NORA), in English and French (three 32-page issues per year), in order to encourage communication on all subjects relating to the world's heritage of rock art. The newsletter is distributed in 104 countries, and plays an important role in diffusion of knowledge and in heritage protection.

Further information from:
International Committee on Rock Art (CAR-ICOMOS)
11, rue du Fourcat, 09000 Foix, France
Tel: (33) (0) 5 61 65 01 82
Fax: (33) (0) 5 61 65 35 73

A number of ICOMOS publications on rock art are on sale at the International Council on Monuments and Sites
49-51, rue de la Fédération, 75015 Paris, France
Tel: (33) (0)1 45 67 67 70
Fax: (33) (0)1 45 66 06 22
E-mail: icomos@cicrp.jussieu.fr
Website: http://www.international.icomos.org

THE WARA PROJECT (WORLD ARCHIVES OF ROCK ART)

Since 1983, Professor Emmanuel Anati and his team at the Centre of Prehistoric Studies of Valcamonica (Centro Camuno di Studi Preistorici) at Capo di Ponte (Italy) have been working on an ambitious project to draw up an inventory of rock art sites on five continents. More than 100,000 slides and a mass of background material have so far been assembled.

The compilation of these World Archives of Rock Art at the Valcamonica Centre and at the Musée des Sciences de l'Homme in Paris is being supported by UNESCO and the International Council for Philosophy and Humanistic Studies (ICPHS).

Prof. Anati considers that one of the goals of these archives, which cover 40,000 years of the history of art, is to lay the groundwork for broader comparative and synoptic studies on a world-wide basis. "In these archives," he notes, "we have assembled documentation concerning thousands of areas on all the continents in which we have chosen the 150 known rock art sites which are most important historically and artistically speaking. Some of them comprise over a million prehistoric figurations, and many have more than 100,000 images."

Further information from:
Centro Camuno di Studi Preistorici
25044 Capo di Ponte
Valcamonica (Brescia), Italy
Tel: (39-364) 42 091
Fax: (39-364) 42 572

A WORLD PERSPECTIVE ON ROCK ART

In 1983, UNESCO commissioned a world report on the state of research into rock art. This was the first attempt on a world-wide scale to present an overall picture of this early form of artistic creativity.

The report was published by UNESCO in its "Studies and Documents on the Cultural Heritage" series in 1984. A fuller version appeared in the same year in volume 21 of the Newsletter of the Camunian Centre of Prehistoric Studies. In 1993, ICOMOS commissioned another report on the state of research into rock art. It was presented in August of the same year at a Congress held at Colombo (Sri Lanka) and published as a monograph by ICOMOS.

"As the author of these two reports," writes Prof. Emmanuel Anati, "I have seen the amazing progress made in this field in the course of a decade. In November 1997, Editions Larousse in Paris published one of my works, *L'art rupestre dans le monde, L'imaginaire de la Préhistoire* (the Italian edition, *Il museo immaginario della preistoria*, is published under the Jaca Book [Milan] imprint). Here the main considerations and conclusions set forth in the two world reports are accompanied by further reflexions, an exploration of the signification of symbols and the syntax of associations.

"During the writing of the two world reports, the hypothesis emerged that since art is the reflection of a mental outlook, rock art is a documentary source of primary importance for research into the conceptual and psychological foundations of modern men and women. In the earliest art, we find archetypes and paradigms which are still profoundly relevant to our own time.

Further reading:
Rock Art, Colombo, ICOMOS, 1993
L'art rupestre dans le monde, L'imaginaire de la Préhistoire, by Emmanuel Anati, preface by Yves Coppens, Larousse-Bordas publishers, Paris, 1997

commentary

Federico Mayor

The ethics of the future

Unesco/Gil Jacques, Montréal

"Our inheritance was not willed to us". With these words, the French poet René Char reminded humanity, amid the ruins of the Second World War, of its basic responsibility towards history. Thus, a generation of survivors took up the cause of future generations.

This new approach, this quest for human solidarity through both space and time, has for over fifty years been the task of the United Nations in general and of UNESCO in particular. "To save succeeding generations from the scourge of war" is the solemn commitment introducing the Charter of the United Nations. This, too, is what is meant by UNESCO's Constitution when it speaks of contributing to peace and security by promoting collaboration among nations through education, science and culture.

The world has, however, changed in the last fifty years, as have the issues, the challenges and, it must be acknowledged, the dangers of modern times. On the eve of the twenty-first century, diffferent wars are breaking out: we have had experience of world wars and bloody conflicts between nations, but today we are witnessing conflicts that tear peoples apart within nations. This is not the place to dwell on other forms of violence: violence against hope and the future of human beings, against their dignity, or the latent conflicts between cultures and between generations. The scourge seems to be universal. All over the world, the citizens of today are claiming rights over the citizens of tomorrow, threatening their well-being and at times their lives. I repeat: today's citizens are claiming rights over tomorrow's, and we are beginning to realize that we are jeopardizing the exercise by future generations of their human rights. More than ever, the ethics of the future requires that we devise and disseminate that culture of peace which was the aim of UNESCO's founders, and see that it is shared.

Limiting the power of technology

In the economic and social field, debt, division and instability make up the inglorious heritage, the poisoned legacy we leave to our successors. Look at the earth and the natural environment: gas emissions, desert encroachment, pollution and the misuse of natural resources seem to foredoom the planet. The essential, vital needs of our children, not only the earth, water and air but also knowledge, freedom and solidarity, are being sacrificed on the altar of short-term expediency, ambition and profit, thus encouraging the soft options and selfishness of a short-sighted age, bringing to mind the famous saying attributed to the king of a world on the wane: "*Après moi, le déluge*".

There are more serious matters still: it is not only society and the environment but the very essence and biological integrity of the human person that are imperilled. It is now within the realms of possibility for humans to modify the genetic heritage of any species, including their own. They even possess the grim privilege of being able to plan their own disappearance. With modern science we have almost reached the point of no return. Never mind the arguments about the compensation in technological or financial terms: there will be no replacement since what is destroyed has no equivalent, and there will be no payout since what is destroyed is without price. Who can compensate for genocide? Who would dare to claim that we can pay for the earth? If we want to protect our descendants, we must first of all recognize, accept and come to terms with this fundamental paradox: progress and civilization are one side of the coin, but the other side is the possibility of an apocalypse, of irreversible destruction, of chaos. A lucid realization of that fact is the prime requirement of our responsibility to future generations. Agreeing to curb the now unbridled power of technology by ethics and wisdom is henceforth the proper course. Lord Acton's dictum that "absolute power corrupts absolutely" needs to be applied to technology, while science needs to be reminded of Rabelais' saying that "science without conscience is but ruination of the soul".

But where does science dwell, and where are we to look for wisdom? We are nowadays able to travel to the other end of the earth in a matter of hours, and we are able to see for ourselves that, while the great cities of the industrialized

countries may possess the knowledge, it is in the remotest villages that the wisdom is to be found. On the eve of the twenty-first century, we at last have the ability to reconcile knowledge and wisdom and to make them benefit from each other's virtues. With this in mind, we in UNESCO drew up, with the assistance of the International Bioethics Committee, the Universal Declaration on the Human Genome and Human Rights which was adopted by the Organization's General Conference in November last—the first universal declaration to apply to science and to lay down ethical principles in this field which will remind us all that we are born free and equal.

The ethics of the future is an ethics of the fragile and the perishable. We must bequeath to future generations the right to live in dignity in a world preserved.

Foreseeing in order to build

I said we must—in the name of ethics and wisdom—agree to curb the power that technology gives to humans over humans. The issue looms large and the challenge is a real one. In an age of globalization and of the acceleration and multiplication of exchanges, the future appears, if not dark, then at least unclear. Complexity and uncertainty are the key words of our time. I therefore invoke the virtues of an education of concern, since concern stirs us to action, whereas conformity and optimism benumb us. This is, of course, to assume willingness on our part to observe and ask questions of the future, for our temporal short-sightedness is often coupled with a wilful blindness,when not serving as a justification for it. Caught in the whirl of the quick fix, held in the tyrannical grip of short-termism, we do not take the time to shape our actions or think about their consequences. We are hurtling into the future with no brakes and in conditons of zero visibility. But the faster a car goes, the brighter its headlights must be: it is no longer, therefore, a question of adjusting or adapting—adjustment and adaptation always lag behind events, which move ahead more rapidly—but a matter of taking pre-emptive action. We should stop talking about adjustment and adaptation and take a clear-sighted, forward-looking approach, casting a future-oriented eye on the world. We should plant today the seeds of tomorrow, protecting them as they grow, so that tomorrow our children may harvest the fruits of our foresight. To foresee in order to prevent and to foresee in order to build—these are our objectives.

Preserving the human element

Prevention is not merely a possibility: it is an obligation and a moral imperative. This idea has indeed already made some headway in public awareness and in international law. It has even given rise to a new principle, enshrined in 1992 at the Earth Summit in Rio and incorporated into the Maastricht Treaty and some national standard-setting instruments: I refer to the precautionary principle. But the view of that principle which has prevailed has been that of a principle of inaction rather than one of vigilant action. Risk-taking without knowledge is dangerous, but knowledge without risk-taking is worthless. Today, alas, more than five years after the Rio Summit, what has been the outcome, where are the results? The commitments then made have given way to evasiveness, and Agenda 21 has to all intents and purposes remained a dead letter. "Rio plus 5" is "Rio minus 5". We have to ponder this lesson, and sow within democracy itself the seed that can revitalize and reconstitute it. That seed is and can only be the ethics of the future, made central to decision-making, central to democratic deliberation, central to the kind of adversarial appraisal that, rather than obfuscating, appeasing or misleading opinion by serving vested interests, the authorities and the powers that be, must enlighten the public and form its judgment.

Prevention means first and foremost preserving. The ethics of the future is an ethics of the fragile and the perishable. We must hand down to future generations an inheritance that has not been irreparably damaged and polluted. We must bequeath to them the right to live in a world preserved. This concerns first of all our living environment—the new preoccupation of the present age—and such enduring values as health, education, culture, equality, freedom, peace, tolerance and solidarity. The Catalan poet Salvador Espriù told his children: "I have lived to preserve these few words which I bequeath to you: love, justice and freedom". We are responsible not only for our tangible heritage; the essential objects of our duty and responsibility are often invisible and intangible. The concept of heritage has thus taken on new meanings in recent decades: from the straightforward preservation of historic monuments to the Convention for the Protection of the World Cultural and Natural Heritage, adopted in 1972, and from the recognition of our non-material, symbolic and spiritual heritage to the work currently being done by the International Bioethics Committee on the protection of the human genome, the concept of being has gradually pervaded that of having. It is human beings themselves who are the true common heritage of humanity, our priceless universal birthright.

At the dawn of a new century and a new millennium, at a time when the global village no longer seems so distant a prospect, we must shoulder our responsibilities as citizens of the world. This means that we must become aware of our position, in human history as well as in space, and must reflect on our role on the planet and in history. One's love for one's neighbour is indeed also to be measured by the respect one shows for those far distant. Near or far, yesterday or today, other people are still our fellow creatures. Both in space and in time, humanity is one body and we are its members. ■

Cuba's biosphere reserves

BY FRANCE BEQUETTE

The Soviet-made jeep, an aged vehicle with many thousands of kilometres on the clock, turned off the motorway leading from the Cuban capital, Havana, and headed for Playa Girón, on the Zapata peninsula. This was where the Third National Seminar on Cuba's Protected Areas, organized at the request of Antonio Perera Puga, head of the Environment Agency's Protected Areas Centre, was being held. Seventy participants, from all the provinces of Cuba, were attending this seminar, part of whose remit was to respond to a UNESCO questionnaire drawn up with the aim of having the swampland on the Zapata peninsula (the Ciénaga de Zapata) listed as the island's fifth biosphere reserve.

Cuba is the largest island in the Caribbean, 1,250 km long, nearly 200 km wide, and surrounded by some 1,600 islets and reefs. Since two-thirds of its eleven million inhabitants live in towns and cities, there are scarcely more than ten people to the square kilometre in the rest of the island, with the result that the human impact on the environment is very limited.

Seen from the air, Cuba appears predominantly green, with innumerable rectangular fields of sugar-cane and groves of royal palms that alternate with plantations of citrus fruits and bananas. The soil is deep purple shading into violet, and there is water—irrigation canals, lakes and rivers—everywhere. In 1900, the island was still half covered with forest, but now only 19 per cent of it is forested.

THE CIÉNAGA DE ZAPATA

The Ciénaga de Zapata is the Caribbean's largest area—500,000 hectares—of wetland. Its maze of freshwater channels, islands and mangrove swamps is a haven for manatees, 5,000 or so crocodiles, 27 species of reptiles and 15 species of mammals, but above all for 10,000 pink flamingoes and for 160 species of birds, most of them, like the colourful tocororo or Cuban togon (*Priotelus temnurus*)—which together with the royal palm is the country's national emblem—or the ivory-billed woodpecker (*Campephilus principalis*), threatened with extinction. Strangely enough, this peninsula is still not listed among the sites protected under the Convention on Wetlands of International Importance Especially as Waterfowl Habitat (known as the Ramsar Convention, having been adopted at Ramsar, Iran, on 2 February 1971).

Scattered around among several small villages, the peninsula's 9,000 inhabitants make a living from fishing, charcoal burning and tourism. As everywhere else in Cuba, environmental education forms part of the syllabus at all grades in the schools here. The Cuban educational system is, incidentally, so well developed that illiteracy has almost been eradicated, and as for the free national health system, the figures speak for themselves: one doctor for every 275 inhabitants and an infant mortality rate of 9 per thousand, as against 90 per thousand in Africa and 41 in Latin America, for example. Cubans joke that they can have a heart transplant for free but can't get hold of aspirins for love nor money.

The problems of managing Cuba's biosphere reserves are inseparable from the country's overall economic situation. When we visited the Sierra del Rosario reserve, its manager, Maritza García, who does not own a car, had to come to meet us by hitch-hiking (a method known as *botellas* in Cuba). Although she has a brand-new computer provided by UNESCO, she has trouble in obtaining paper and ink for it. Like everything else here, including nails and machetes, they can be bought for dollars, while on the other hand only Cuban nationals can use the national currency, the peso (it should also be pointed out that 300 pesos, regarded as a good salary in Cuba, are equivalent to $12). Slogans displayed on walls drive home

© France Bequette, Paris

An orchid of the Cattleya genus (Guanahacabibes biosphere reserve).

© France Bequette, Paris

Freshwater channel in the Ciénaga de Zapata biosphere reserve.

the message that Cuba should not count on outside help, but well-targeted aid would be invaluable for the nature conservation enthusiasts whom we encountered everywhere on our travels.

SIERRA DEL ROSARIO

The Sierra del Rosario reserve is a 25,000-hectare mountain region, 50 km from Havana, with four rivers running through it. There are four types of vegetation within the reserve: tropical rainforest, deciduous woodland, pinewoods, and savannah, this last being home to many orchids and endemic plants. There are 608 species of higher plants, 90 species of birds, many of them endemic to this site, 16 species of amphibians, including the world's smallest frog, *Smithilus limbatus*, and 33 species of reptiles. The two central zones consist of two rocky peaks rising to over 500 m. In the 1,000-hectare buffer zone, traversed by 175 km of roads acting as fire-breaks, tree-felling and hunting are prohibited. Guides accompany visitors along nature trails. There are several villages where the region's 4,000 or so inhabitants live, the most remarkable of these being Las Terrazas, where, thanks to income from tourism, a hotel with trees built into its design has been constructed, and local craftspeople and artists sell wood-carvings and superb paintings of orchids.

Coconut-palm nursery (Cuchillas del Toa biosphere reserve).

© France Bequette, Paris

Trees are incorporated in the structure of this "eco-hotel" in the Sierra del Rosario biosphere reserve.

© France Bequette, Paris

GUANAHACABIBES

The Guanahacabibes biosphere reserve is located at the extreme western end of the island. Its name derives from that of the indigenous cave-dwelling people who lived there for almost 2,000 years, until the sixteenth century. Its 101,500 hectares of never-ending beaches, jagged limestone pavements, marshland, peat bogs and mangrove swamps provide a habitat for about 600 species of plants, 15 of which are found nowhere else, deer, a large rodent, the hutia (*Capromys*), bats, reptiles, wild cattle and any number of birds.

Much research has been carried out on this reserve since 1985. Jorge Ferro, Director of the Environment for the large province of Pinar del Rio, who is writing a book on tiny orchids, has to hitch-hike to get there—and has to make do with one roll of camera film a year. He guided us on the nature trails that have been laid out through the reserve, one of them in the central zone. The people living on the reserve are employed by a State forestry enterprise. In the village of Valle de San Juan there are 1,200 beehives, producing 59 tons of honey a year. Funds provided by a Spanish organization have made it possible to build a large hothouse for growing tomatoes, for which there is a ready market, and solar panels are due to be installed in the village. The oldest inhabitant, Esther, grows and prescribes medicinal plants.

BACONAO

From Havana we flew to Santiago de Cuba, which is only two kilometres west of the 84,600-hectare Baconao reserve, an integral part of the Gran Parque Nacional Sierra Maestra. The reserve is managed by Bioeco (Eastern Centre for the Study of Ecosystems and Biodiversity), a very active organization for which 47 scientists work in Santiago's Natural History Museum. Also in Santiago is a garden run by Manuel Caluff, a veritable research centre linked to the reserve, established in 1976, where 350 species of fern and an abundance of orchids grow.

Some superb cacti, including an endangered endemic species, *Melocactus harlowii*, are to be found on the dry coastal tablelands. The scenery is very different around the Gran Piedra, a mountainous area of the reserve which has 138 species of endemic plants and 919 species of animals. Its pines, which were grown for timber and are gradually being replaced by native species, are interspersed with tree-ferns and other types of fern—no fewer than 335 species—and terrestrial orchids (*Phaius tanckervillie*). ▶

CUCHILLAS DEL TOA

From Baconao, a mountain road leads to the Cuchillas del Toa reserve, near Baracoa, the first town in Cuba, founded in 1512. The reserve's central zone encompasses the Alejandro de Humboldt Park, 60,000 hectares of mountainous terrain traversed by countless rivers and with an annual rainfall of 4,000mm, where there is no question of venturing without a guide.

We were shown around by the park's director, Rael Acebal Suárez, who told us that 70% of its plant species are endemic; more than half of the species growing in Cuba are to be found there. There are four farming communities within the park. Its 67,000-hectare buffer zone has been seriously damaged by agricultural activities, and a recent forest fire did nothing to improve matters. The local inhabitants are helping to replant the mangrove swamps, where there is a population of manatees. Since meat, like other staple foods, is rationed, they are allowed to hunt wild pigs and hutia but are urged to do so in moderation. Two villages designed to meet the needs of "ecotourism" are being built with funds provided by Germany.

PRIVILEGED RESERVES

Compared with so many other biosphere reserves we have visited on four continents, those in Cuba—even if their boundaries are not always defined as accurately as they might be—are on the whole in a very good state of preservation, the reason being that there is very little industry in Cuba, its population density is extremely low, its transport system is sketchy and its economic situation is such that nothing can be wasted. Since bottles, plastic bags and paper are in short supply, people don't litter the countryside with them. Those who enjoy the privilege of access to the reserves appreciate their value and respect their biodiversity. Last but not least, the scientists who work there are dedicated to their task and do not look for financial rewards. They manage as best they can, uncomplainingly, endorsing the Cuban proverb, *Cuando no hay perro, se montea con gato*—if you haven't got a dog, a cat will do, or, beggars can't be choosers. ■

WORLD

© Stanislas Fautré/Ask Images, Paris

UNPOPULAR BISON

By 1900, there were no more than two dozen bison left in Yellowstone National Park (U.S.A.). Bison have since been reintroduced and the herds have been re-established, but the proliferation of these animals has not been to everyone's taste. Around a third of all the bison that died during the unusually harsh winter of 1996-97 were killed outside the park at the request of nearby ranchers who claimed that they could infect their cattle, with brucellosis in particular—although no cases of brucellosis have been officially reported and elk, which also carry the disease, have not been shot. ■

PROTECTING SRI LANKA'S MEDICINAL PLANTS

A $4,570,000 loan from the Global Environment Facility will enable the Sri Lankan government to set up five protected zones to preserve medicinal plants. Of the 1,414 plants that are commonly used by Sri Lankans for medicinal purposes, at least 189 are endemic to the island, and 79 of these are threatened with extinction through uncontrolled gathering and the conversion of their natural habitats into farmland. This loan will make it possible to improve existing nurseries and create new ones, to create a network providing information about these plants, and to raise public awareness of the need to protect them. ■

COMPLETE RECYCLING

The United States Information Agency recently raised the possibility of creating new materials to replace plastic. These biopolymers (many molecules linked together to create one large molecule) made from the waste products of the agro-food industry would have all the characteristics of normal plastics but would be biodegradable. When composted, they could be used as fertilizers. ■

REDUCING WASTE

The United Nations Zero Emissions Research Initiative (ZERI) programme at the United Nations University (see *Unesco Courier*, March 1996) is enjoying increasing success. The University of Tokyo has contributed $10 million to the programme. In 1995, a ZERI office opened in Bogotá (Colombia), and another in Windhoek (Namibia), where, with funding from Japan through Unesco and UNU, a first chair was created in 1997. On the occasion of the programme's Third Annual World Congress, held in Jakarta (Indonesia) in 1997, six universities agreed to collaborate on a 500-hour interdisciplinary course leading to a Master's degree in integrated biosystems that will enable students to establish direct links between science and technology. The aim of turning waste matter into raw materials may thus finally become a reality. ■

WILL THE BIO-BIO CONTINUE TO RUN WILD?

The Bio-Bio River (Chile), one of the world's last major free-flowing rivers, is about to be blocked by a second hydroelectric dam. Activist Juan Pablo Orrego, founder of a river protection group, claims that this dam will flood 34 square kilometres of a richly diverse forest, dooming 14 plant and animal species to extinction and, more especially, covering the ancestral burial grounds of 101 Pehuenche Indians. Orrego, who received an ecology award in 1997, was unable to prevent the construction of a the first, smaller Pangue dam. In addition, the Pehuenche Indians have mixed feelings about the project. ■

IS THE END IN SIGHT FOR TIGERS?

No-one can say for certain how many tigers there are left in the world, most estimates ranging from 5,000 to 7,000. It is, on the other hand, easier to count dead ones: in India, for example, 63 were killed in 1997. Carcasses have even been found in the Andhra Pradesh reserve, which is where they are supposed to be best protected but where the wardens, less well armed than the poachers, have great difficulty in protecting them. ■

A NEW PARK FOR CAIRO

The Aga Khan Foundation plans to invest $15 million to lay out a 30-hectare public park in the Al Azhar neighbourhood of Cairo (Egypt). The creation of this park will form part of the Foundation's programme of support for historic cities, under which it will also undertake, with the co-operation of local community development organizations, the rehabilitation and protection of the environment along Cairo's historic city wall. ■

© Charles Lénars, Paris

Anniversary

Elijah ben Solomon Zalman, the *gaon* of Vilna

BY HENRI MINCZELES

A great 18th-century Jewish scholar and spiritual leader who marked the thinking of eastern Europe's Jewish communities

Elijah ben Solomon Zalman, who was born in 1720 in Seletz, near Grodno, was considered to be a genius from his childhood. Even before he was thirteen years old and passed the *bar mitzvah* ritual admitting him into the Jewish community as an adult, he had already become interested in the natural and religious sciences.

He married at eighteen, and had many children. After a stay in Keidany with his father-in-law, he travelled to Poland and Germany and visited numerous Jewish communities. Then he settled on the outskirts of Vilna in the Grand Duchy of Lithuania, and later moved into a house of study in the city which was created for him and which he directed.

Thanks to an inheritance, he and his family had a home and a small stipend for life, in addition to the regular salary paid him by the city's Jewish community, which had elected him its *gaon* or spiritual leader. By the time he was thirty years old, his reputation had spread beyond his own community, but he nonetheless firmly refused to become a rabbi or to accept any other official position. He preferred to remain a spiritual leader and live a secluded life devoted to study.

The story goes that he studied at night by candlelight in order to be able to concentrate, and slept only two or three hours a day. This also enabled him to keep up a voluminous correspondence with rabbis and especially to study the compilation of law known as the Jerusalem Talmud.

When he was over forty, he emerged from seclusion and began to teach some twenty pupils. His reputation grew even further. An important rabbi from Jerusalem paid tribute to him as "the brilliant light of the century". His advice was much sought-after and his opinions had the weight of authority.

The dispute with Hassidism

However, a pietist movement known as Hassidism developed in Galicia and spread rapidly to Jewish communities throughout eastern Europe. Its mysticism appeared to many as an antidote to hard times, and instilled in them a complete change of heart. Hassidism, which in a sense "democratized" the faith, preached the joyful adoration of God, rejected asceticism and attempted to make the medieval mystical doctrine of Kabbalah widely accessible.

The *gaon* of Vilna was violently hostile to the Hassidim, whom he described as "mystics like leprosy on the body of Israel." He thought the Hassidic cult of the Tsaddikim (Just Men endowed with divine power and perception) could give rise to false Messiahs. He managed to have their centres closed and pronounced an anathema (*herem*) on their books.

The Czarist authorities became involved and the dispute became more than a purely theological debate. A number of Hassidic leaders were even briefly imprisoned. In 1777, two of the movement's leaders, Menahem Mendel of Vitebsk and Schneur Zalman of Liadi, vainly attempted to bring about a reconciliation. Elijah ben Solomon stood firm, and in 1794 ordered a public burning of the book written by the movement's founder, Israel ben Eliezer, known as the Baal Shem Tov (Master of the Good Name). This established the *gaon* as the leader of the *mitnagdim*, or those who opposed the Hassidic movement.

The *gaon*'s message

The *gaon*'s refutation of Hassidism was based on the principle of the eternity of the Talmud, the first five books of the Bible, which record Jewish Law, including the ten commandments received by Moses in the desert. The *gaon* of Vilna believed that true Jewish learning could only be based on a close study of the scriptures and that it was necessary to know the Bible as well as all later commentaries and writings, notably the Talmud.

The *gaon* also considered that knowledge of biblical texts should not be confined to an elite, and that for educational reasons women should also have access to it, especially the Book of Proverbs.

He was also interested in the natural sciences, and claimed that "if a man has no knowledge of the secular sciences, he cannot truly understand the Torah." He was a keen student of the natural sciences and other disciplines including music and medicine.

He is credited with some seventy studies and commentaries, more than fifty of which were printed after his death. These include explanations and discussions of Talmudic texts as well as analyses of Hebrew grammar, a subject which fascinated him. His pupil Issachat Baer anthologized his prayers and favourite reading in a volume entitled *Maaseh Rav*.

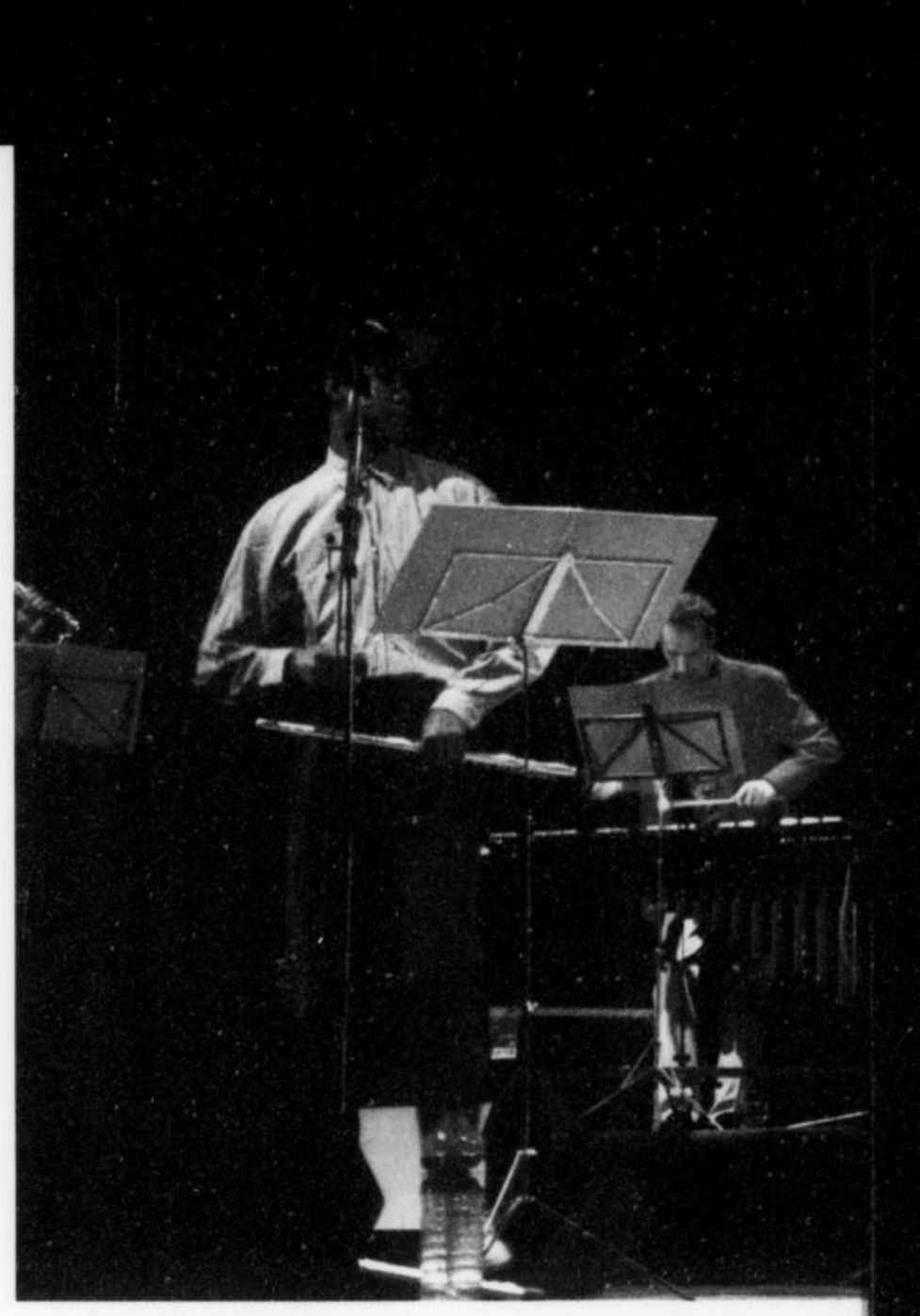
A number of sayings attributed to the *gaon* of Vilna have survived, such as "The Torah is like the rain; it nourishes useful plants and weeds", and "Life is endless pain and suffering, and sleepless nights are our common lot". His personality helped shape an outlook typical of the Lithuanian Jew, influenced by the region's cosmopolitanism and by the persistence of rationalistic Judaism.

Towards the end of his life, the *gaon* was obliged to confront another progressive reform movement, the Haskala, led by Moses Mendelssohn, the translator of the Bible into German. He feared that this movement would lead to Jewish assimilation and the loss of Jewish identity.

On the eve of Yom Kippur 1798, the *gaon* of Vilna fell ill and died shortly thereafter. The exact date of his death is uncertain and some sources date it to 1797. The plain mausoleum where he is buried is set in the Jewish quarter of the new Vilna cemetery. It recalls to Jews a great thinker and rigorous man who was a faithful servant of Judaism. ■

It's rumba time!

BY ISABELLE LEYMARIE



The deportation of millions of Africans to the Americas during the dark centuries of the slave trade was one of the worst tragedies of history. It also gave rise to an extraordinary process of cultural exchange. The story of the rumba shows this transatlantic cross-fertilization at work.

Afro-American music began making its way back from the Americas to African shores in the 1920s. It had changed, and returned in a creolized, hybrid form which engendered stimulating new musical forms such as *mbaqanga* in South Africa, *juju* in Nigeria, "highlife" in Ghana and *mbalax* in Senegal. At the same time, contemporary African music, influenced by jazz, soul, funk, rap, Cuban rhythms, reggae, beguine and calypso began moving to the New World, bearing fertile seeds of change.

Much secular Afro-Latin and Afro-Caribbean music is of Bantu origin, from regions which once belonged to the ancient kingdom of Kongo. American dances such as *chumbe*, *paracumbe*, fandango, *candombe*, *yuka*, *makuta*, samba and conga are all danced to a regular drum beat with strong hip gyrations and pelvic thrusts and can incontestably be traced back to Kongo sources.

The Congolese musician Rido Dieudonné Bayonne (see box) has recently traced the remarkable history of the rumba.

The *rumba brava*, which is derived from fertility and war rituals, first appeared in Cuba in the mid-nineteenth century. Today, it is still danced in the poor neighbourhoods of Havana and Matanzas, and in Cuban communities in the United States. The dance has three variants: the erotic *guaguancó*, the *yambú*, which is more buttoned up, and the acrobatic *columbia*, which is usually a men-only dance. The most popular version today is the *guaguancó*, and its rhythms have been widely incorporated into Latin jazz and salsa.

The birth of *son*

Some years later, a more hybrid rhythm known as *son* was born in the rural areas of Cuba's Oriente province. Spanish in origin, *son* has become syncopated through contact with Blacks. It was initially played using a *marímbula* (xylophone) or a *tres* (a type of guitar with three double chords), a bongo and a *botija*, a jug which the instrumentalist blows into to produce sounds like a bass. Needy musicians often made rough-and-ready *tres* out of packing boxes for codfish. Like samba or calypso, *son* lyrics are a mine of broad and satirical humour and constitute a juicy chronicle of Cuban life.

Son took root in Havana in the early twentieth century. It was censored in the 1920s during the dictatorship of Gerardo Machado because it was regarded as too "African", but it survived in the city's Black neighbourhoods. Under the influence of jazz, the trumpet soon became part of *son* combos, which were seven strong and usually included two singers. Competitions were held among different groups and occasionally degenerated into altercations requiring police intervention.

In the 1920s, when the tango and popular Mexican music were all the rage in the United States, several American firms offered recording contracts to *son* groups. The Sexteto Occidente, the Septeto Habanero, the Septeto Nacional and the Trio Matamoros all helped win a reputation for this music which then very quickly made its way into the homes of the

© Jean Guyot, Bayonne

Rido Bayonne on stage

Further reading and listening about slavery, Rido Bayonne, and Afro-Cuban music:

Slavery: an Unpunished Crime, *Unesco Courier*, October 1994.

Interview with Rido Bayonne, in *The Body and the Self*, *Unesco Courier*, April 1997.

"Gueule de Black," Rido Bayonne in concert, DC Jazz aux Remparts, JAR 64008

La salsa et le latin jazz, by Isabelle Leymarie, Presses universitaires de France ("Que sais-je?" series), Paris, 1993.

Du tango au reggae, Musiques noires d'Amérique latine et des Caraïbes ("From the Tango to Reggae, Black Music of Latin America and the Caribbean"), by Isabelle Leymarie, Flammarion, Paris, 1996.

Cuban Fire. Musiques Populaires d'expression cubaine, Isabelle Leymarie, Outremesure, Paris, 1996.

Musiques caraïbes, Isabelle Leymarie, Actes Sud-Cité de la Musique, Paris, 1996.

white Cuban middle class. Havana's elegant clubs soon began opening their doors to *son* musicians.

Together with *rumba brava*, *son* is still highly popular among Cubans today, and is the basis of the dance music known as *salsa*.

From rumba to soukous

At the same time, in Africa and particularly in Congo and the former Zaire, where music lovers hear the distant echo of their own musical heritage in Cuban rhythms, many "Latin" bands were created, their singers reproducing Spanish lyrics phonetically without understanding what they meant. Promoted under the more commercially appealing name of "rumba", a blend of *son*, West Indian beguine and indigenous rhythms later gave rise to Zairean and Congolese rumba. Just as anecdotal as its Cuban cousin, this African rumba recounts the small details of daily life, and praises the charms of women and nature using the melodic scansion of lingala (a Bantu language).

With the rise of Rock n' Roll and the popularity of the twist in the 1960s Congolese groups replaced their acoustic guitars with electric guitars. Towards the end of the decade, the soukous, a hippy dance that is particularly suggestive when performed by women, became more popular than the local rumba. Influenced by soul and by the Christian hymns introduced to Africa by missionaries, sukous also underwent changes and became more dynamic and more fundamentally African. ■

A festival of rumba

In April 1998, the Congolese composer, band-leader and multi-instrumentalist Rido Bayonne is organizing a four-day music festival in the Paris suburb of Clichy la Garenne to commemorate the abolition of slavery in the French colonies in 1848. The event, entitled "Autour de la Rumba", will feature Cuban and Congolese music, zouk, Senegalese reggae, hip hop, the art of African griots, and rhythm and blues. There will also be a more surprising encounter between rumba and baroque and classical music.

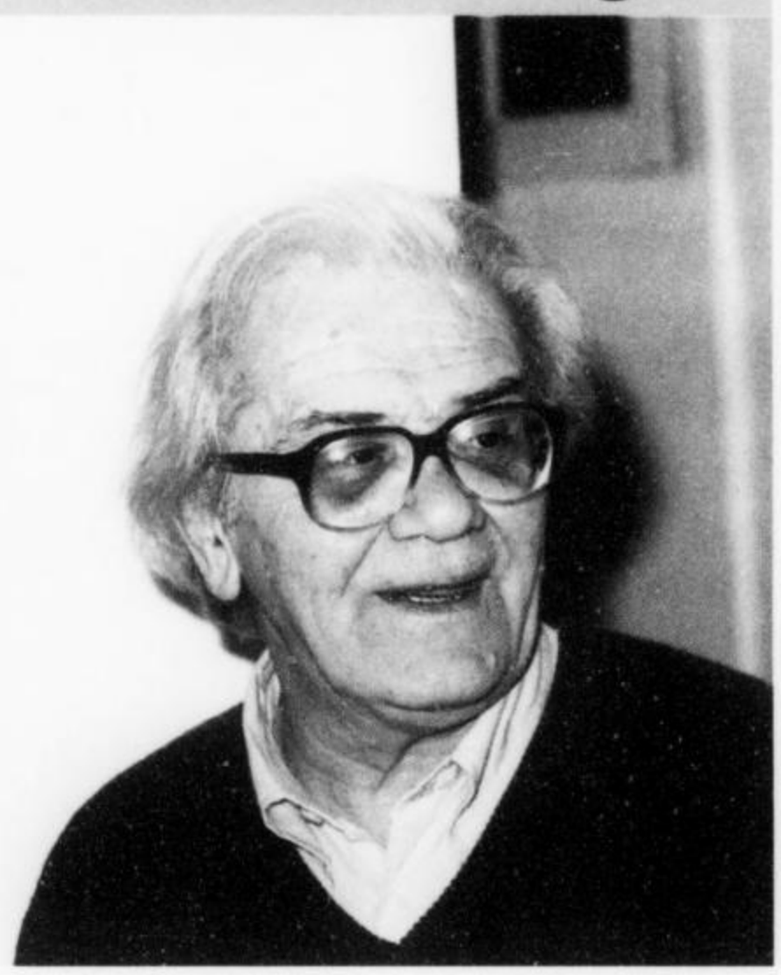
Rido Bayonne's Big Band Afro-Jazz, the Saint-Chaffre du Monastier Band and a chamber orchestra will join forces for the first performance of Bayonne's latest composition, *Mémoires (Cause à effet)* which is inspired by the transatlantic musical saga.

West-African chordophones, Arabic drums, fifty horns and some 20 Western string instruments—violins, cellos and basses—will all perform together. Five flautists perched in a baobob tree will then play "a hymn to life and to the spritual communion of the continents." Below them, female singers and dancers, accompanied by guitar, piano, keyboard, drums, and other percussion instruments will celebrate the latest forms of this creative blend of jazz, blues, *sukuss*, calypso, reggae and rumba.

The slave trade and the upheavals it caused thus give way to a euphoric musical marriage celebrated by effervescent rhythms. This heartfelt and highly personal tribute to African ancestors who were forced to make the journey to America is also a hymn to human brotherhood brought together on this occasion by the magic of art, and the artist's universal vision and creativity. **I. L.** ■

Izet Sarajlić

'Poetry is on the side of love'



© Christophe Chiclet, Paris

Izet Sarajlić is widely regarded as Bosnia's greatest living poet. A member of the Bosnia and Herzegovina Academy of Arts and Sciences, he has published more than 15 collections of poetry and a volume of memoirs. A volume of his works was published in English under the title *Poetry* by Dist 136 Press, Minneapolis, in 1975. His two most recent books, written in Sarajevo during the war, have been translated into French as *Le livre des adieux* and *Recueil de guerre sarajévien* (1997). Here he is interviewed by Jasmina Šopova.

■ **Poetry has been part of your life for half a century. How do you see this art-form today?**

Izet Sarajlić: I'm sorry to see that poetry has lost the place it should occupy in people's lives, Poets are partly responsible for this, but the spirit of the age is also to blame. When I was young, Neruda, Sartre, Malraux, Camus, Tuwim, Frost and Ungaretti were the important writers. Living in that world brought responsibilities as well as pleasure; you had to surpass yourself. Imagine having a poem published in a magazine next to one by Neruda! We couldn't afford to be mediocre. In today's literary world, it's not difficult to pass yourself off as a poet. The poet will soon belong to an extinct species. I fear that people will eventually stop reading us altogether.

■ **Are you equally pessimistic about the future of prose?**

I.S.: Yes, because I think that modern novelists couldn't care less about that essential thing known as love. I can't remember the last heroine I fell in love with. The age of Anna Karenina is gone for good. Today's novelists write against a background of violence, and they want to shock their readers. In modern novels there is a kind of indifference, a failure to connect, whose causes I cannot fathom. Is it because writers are trying to appeal to the culture moguls who announce a "new sensibility" every five years or so?

After the Sarajevo tragedy, I had the opportunity to make several trips abroad. I was amazed to see splendidly bound works by so many nonentities displayed in bookshop windows. There are so many bestsellers and so few great writers. The era of great art is over. It seems as though we've lost the joy of creation.

■ **A Russian poet once said that even sadness is joyful in your poetry. But your recent war poems give the opposite impression.**

I.S.: The fact is that all values have been turned upside down, not only for me but for everybody. All the old landmarks have gone. Immorality will soon replace moral values and lies will replace truth. This change has happened very quickly. If the world had moved more slowly in this direction (which actually leads to a dead end), people might have had the time to prepare themselves psychologically. But this is impossible because of the speed at which things are moving.

I feel that civilization took a wrong turning about thirty years ago, as if the powers-that-be had pointed it in a direction in which I can see no future. It appals and depresses me that this utter confusion is accepted as the normal human condition.

■ **Was it the war that changed your view of the world?**

I.S.: To some extent, yes. I've always thought that humanity needed responsible politicians and that there were fewer and fewer of these. It's no accident that the war which has destroyed my former homeland should have happened at a moment in history when there was no longer anyone capable of giving a constructive turn to political events and leading this poor world, so rich in trivia and so poor in basics, into the twenty-first century.

When foreigners who came to Sarajevo during the war asked me what I thought about the West's attitude to Bosnia, I used to tell them that while Tito had had the guts to stand up to the might of Stalin, nobody today—neither the United States, nor France nor Germany—is capable of saying "no" to a local bandit.

The war also taught me something else. It showed me that the behaviour of the world's

thinkers is not only irresponsible but immoral. And so was the conduct of some of the generals stationed in Bosnia and Herzegovina. I'm thinking of one of them in particular who was reported to have raped young Muslim girls who were brought to him in brothels. Everybody knew about it. Everybody turned a blind eye.

The war also showed me the meaning of solidarity. We received great support from ordinary people, especially in France, Italy and Switzerland, and without it we would not have survived. I used to think that the Swiss were people who didn't show their feelings. Well, it was the Swiss who showed us more kindness than anyone else.

■ **Cultural life in Sarajevo was pretty dynamic, wasn't it? Musical life, theatre and publishing all went on.**

I.S.: The Latin saying whereby people fall silent when the guns roar is false. Some very fine work was produced in Sarajevo during the war. It would be a good thing if foreigners could read some of the stuff we wrote, so that they could understand that civil war is a plague, that it is contagious and that it could happen elsewhere in the world, in an even more terrible form.

■ **In one of your books, *Recueil de guerre*, you say: "If I've survived all this it's thanks to poetry and to a dozen or so people, ordinary folk, true saints of Sarajevo, whom I hardly knew before the war."**

I.S.: I wrote my two war books in my cellar as shells whistled overhead. I couldn't, like Eluard, paint the word "freedom" on the walls of Sarajevo because no walls were left standing. So I said to my wife: "Look at me, I am like a late twentieth-century Milton, writing a *Paradise Lost* by candlelight."

But I didn't start out with the idea of writing poetry. I didn't care about poetry. It's a long time since I was interested in poetry. Just before the war, I wrote that the worst places for poetry were the very places where poetry could be found.

When I said that poetry had saved me, I meant that these extremely unhappy war years were perhaps the happiest years of my life as a poet. I was motivated, I had readers, or rather listeners. We had no paper for printing and I was not on close terms with the few publishers who had any. In any case, they specialized in pseudo-religious work and propaganda, and so I wasn't very keen on being published by them. Nevertheless, my poems reached the public, which made me very happy indeed. During the war, my literary and moral standing in the eyes of my fellow citizens seemed to be high. I saw that they wanted to help me in one way or another. They would step aside for me when we queued for water, although I naturally never took advantage of that, and they would give me a cigarette, or an apple for my grandson.

'I am Muslim. My wife is Catholic, her family came from Austria, and our daughter married an Orthodox Christian. I hope that my grandson will put his hand on the shoulder of a Jew. That would complete the family portrait.'

■ **In those circumstances, poetry becomes something different, doesn't it?**

I.S.: When a man has a dressing gown, when he has enough to eat, when he can step out onto his balcony, eat cherries or drink his coffee with his own cigarette and not one he has had to beg for, then he can think about aesthetics and aestheticism. But when he's surrounded by misery and is a prey to it as well, when he finds himself completely isolated and degraded, he asks himself "Where are the simple, normal words? Have they abandoned art?"

I have had a portrait of one of my favourite poets, Boris Pasternak, in my bedroom for a long time. For me, it was a relic. It's still there, despite the three million shells that have reportedly fallen on the city. One day, when I happened to be in my bedroom and not down in the cellar, I looked at it and suddenly thought that even he, the wonderful Pasternak, no longer meant to me what he once did. So many fine words, such perfect harmony, yet nothing about my suffering, nothing about human suffering.

■ **Has the war changed your poetry?**

I.S.: I don't think there's any fundamental difference between what I wrote before and during the war. The form may vary somewhat here and there. When shells are bursting around you, you have to get it down as quickly as you can, so you don't pay much attention to form. In any case, when you have something to say, the form chooses itself. I'm not the kind of writer who searches for a poem. A poet shouldn't do that. A poem should search for—and find—its poet.

I haven't changed and I haven't felt any need to. I got into poetry after World War II. In 1942, the Italian fascists shot my older brother. In everything I've done since, I've tried my hardest not to betray the memory of that young man. I'm now over fifty years older than he was then. He's the person I'm answerable to.

In today's super-ideological age which repudiates all previous ideologies, I stick to the position I chose at the end of what we now call the "other" war, 1939-45. That was a time when we all believed that love could be revived and we thought we had to write as if we were planting a birch tree in the municipal park or fixing a doorbell to a door. We were all in favour of love and remained faithful to it, except for some who betrayed it during this recent war.

■ **Do you think that such idealism is still possible today?**

I.S.: I don't know. I can't think now the way I ▸

did when I was young. I'm no longer capable of being as generous as I was then. "Universal" thoughts are far from my mind. My doorstep is the limit of my world these days. I'm concerned about my wife's health, my daughter's job, my grandson's future.[1] I'm eager to redecorate my flat and put my bedroom in order. If I write a poem or two amidst all that, well and good, but If not, too bad. Perhaps I have written enough.

■ **A French television programme about Sarajevo and your family showed that part of your flat had been seriously damaged.**

I.S.: One day, the Chetniks[2] shelled my flat three times. They thought they'd killed me, so they stopped firing and went away. I received a blow on the head and collapsed. When I came to, it was quite funny. A painting had fallen on top of me and I woke up with my head in the frame, like a Rembrandt!

■ **I've known you since I was a child but I've never asked you about your religion.**

I.S.: I'm a Muslim. So what? I've never lived in a predominantly religious environment any more than any of my compatriots. I can't see people as Orthodox or Muslim or whatever. Religion may be important to some, but it's a personal matter.

I was in Strasbourg not long ago and I couldn't understand why everyone kept insisting on the fact that I was Muslim. They told me that it was important to say so. I didn't consider it to be important at all. In the same way, foreign journalists who came to Sarajevo would often ask me whether I thought that all these ethnic groups could live together. I would always answer by introducing my family to them and saying: "My wife is Catholic, her family came from Austria and our daughter married an Orthodox Christian. I hope that fifteen years from now, when the time comes for my grandson Vladimir to experience the same kind of sufferings as Goethe's young Werther, he will put his hand on the shoulder of a Jew. That would complete the family portrait."

■ **Do you think that Bosnia has any future in the present situation?**

I.S.: I don't know. Like many people, rightly or wrongly, I support the Dayton Agreements. Yet I know that they are not the real solution. The people who are deciding the fate of Bosnia have not grasped the soul of the country, but they talk with amazing glibness about corridors, republics, federations, and so on.

There's one thing that the West doesn't understand, or doesn't want to. In Spain, we saw a dress rehearsal for Western fascism, and in Bosnia we saw the same thing for Eastern European fascism. In Spain, fascism came to power, unfortunately; as luck would have it, ours did not. But there is no proof that it has definitively failed. Anything is possible today. ■

1. Mme Sarajlić passed away shortly after this interview was completed. *Editor*
2. Serbian ultra-nationalists. *Editor*

AUTHORS

ROBERT G. BEDNARIK, of Australia, is the founder and Secretary of the Australian Rock Art Research Association (AURA) and Convener of the International Federation of Rock Art Organizations (IFRAO). Among the journals he publishes are two leading scientific periodicals, *Rock Art Research* and *The Artefact*.

EMMANUEL ANATI, of Italy, is Professor of Palaeo-Ethnology at the University of Lecce and Director of the Centro Camuno di Studi Preistorici. He is the co-ordinator, on behalf of UNESCO, of the WARA (World Archives of Rock Art) Project, and the author of many scientific publications, including *The Mountain of God: Har Kakom* (Rizzoli, New York, 1986) and *World Rock Art. The Primordial Language* (Edizioni del Centro, Capo di Ponte, 1993).

DENIS VIALOU, of France, teaches at the Muséum National d'Histoire Naturelle in Paris, and conducts research at his country's National Centre for Scientific Research (CNRS). He is the author of several books on prehistory, including *La préhistoire* and *Au cœur de la préhistoire, Chasseurs et artistes*, published by Gallimard, Paris, in 1991 and 1996 respectively.

JEAN CLOTTES, a French prehistorian and high-ranking official in his country's heritage conservation service, is President of the International Committee on Rock Art of the International Council on Monuments and Sites (ICOMOS). He is the author of many publications, including *The Cave Beneath the Sea. Paleolithic Images at Cosquer* (with Jean Courtin, Abrams, 1996) and (with David Lewis-Williams) *Les chamanes de la préhistoire. Transe et magie dans les grottes ornées* (Le Seuil, Paris, 1996).

FRANÇOIS SOLEILHAVOUP, a French geologist and natural science teacher, specializes in the geomicrobiology of rock surfaces. He takes a special interest in the study, protection and conservation of the world's open-air rock-art sites and in education relating to the world cultural and natural heritage. He has written several studies on subjects including the conservation of petroglyphs in Kazakhstan and the rock art of the western Sahara.

AXEL and ANNE-MICHELLE VAN ALBADA, of Belgium, formerly taught and carried out research at Brussels Free University and have for the last fifteen years been engaged in drawing up a comprehensive map of rock art in Libya's Messak region.

OSAGA ODAK, of Kenya, is a Professor of Anthropology at the University of Nairobi. He specializes in the study of rock art and traditional technology and culture, and has published many articles and studies on these subjects.

HENRI MINCZELES is a French historian and journalist whose publications include *Vilna, Wilno, Vilnius: La Jérusalem de Lituanie* (La Découverte publishers, Paris, 1993) and *Histoire générale du Bund: un mouvement révolutionnaire juif* (Austral, Paris, 1995).

FRANCE BEQUETTE is a Franco-American journalist specializing in environmental topics.

ISABELLE LEYMARIE is a Franco-American musicologist whose publications include *La musique sud-américaine, Rythmes et danses d'un continent* (Gallimard, Paris, 1997).

THE UNESCO COURIER
51st YEAR
Published monthly in 27 languages and in Braille by UNESCO, The United Nations Educational, Scientific and Cultural Organization.
31, rue François Bonvin,
75732 Paris CEDEX 15, France.
Fax: (33) (0) 1 45.68.57.45
e-mail: unesco.courier@unesco.org
Internet: http://www.unesco.org

Director: Adel Rifaat

EDITORIAL STAFF (Paris)
Managing Editor: Gillian Whitcomb
English edition: Roy Malkin
French edition: Alain Lévêque
Spanish edition: Araceli Ortiz de Urbina
Features: Jasmina Sopova
Art Unit/Production: Georges Servat
Illustrations: Ariane Bailey (Tel. (33) (0) 1.45.68.46.90)
Documentation: José Banaag (Tel. (33) (0) 1.45.68. 46.85)
Liaison with non-Headquarters editions and press: Solange Belin (Tel. (33) (0) 1.45.68.46.87)
Film duplication: Daniel Meister
Secretariat: Annie Brachet (Tel. (33) (0) 1.45.68.47.15),
Administrative Assistant: Theresa Pinck
Selection in Braille in English, French, Spanish and Korean: (Tel. (33) (0) 1.45.68.45.69)

NON-HEADQUARTERS EDITIONS
Russian: Irina Utkina (Moscow)
German: Dominique Anderes (Berne)
Arabic: Fawzi Abdel Zaher (Cairo)
Italian: Gianluca Formichi (Rome)
Hindi: Ganga Prasad Vimal (Delhi)
Tamil: M. Mohammed Mustafa (Madras)
Persian: Jalil Shahi (Teheran)
Portuguese: Alzira Alves de Abreu (Rio de Janeiro)
Urdu: Mirza Muhammad Mushir (Islamabad)
Catalan: Joan Carreras i Martí (Barcelona)
Malay: Sidin Ahmad Ishak (Kuala Lumpur)
Swahili: Leonard J. Shuma (Dar-es-Salaam)
Slovene: Aleksandra Kornhauser (Ljubljana)
Chinese: Feng Mingxia (Beijing)
Bulgarian: Dragomir Petrov (Sofia)
Greek: Sophie Costopoulos (Athens)
Sinhala: Neville Piyadigama (Colombo)
Finnish: Riitta Saarinen (Helsinki)
Basque: Juxto Egaña (Donostia)
Thai: Duangtip Surintatip (Bangkok)
Vietnamese: Ho Tien Nghi (Hanoi)
Pashto: Nazer Mohammad Angar (Kabul)
Ukrainian: Volodymyr Vasiliuk (Kiev)
Galician: Xabier Senín Fernández (Santiago de Compostela)

SALES AND PROMOTION.
Fax: (33) (0) 1.45.68.57.45
Subscriptions: Marie-Thérèse Hardy (Tel. (33) (0) 1.45.68.45.65), Jacqueline Louise-Julie, Manichan Ngonekeo, Mohamed Salah El Din (Tel. (33) (0) 1.45.68.49.19)
Customer service: Michel Ravassard, (Tel. (33) (0) 1.45.68.45.91)
Accounts: (Tel. (33) (0) 1.45.68.45.65)
Shipping: Daniel Meister (Tel. (33) (0) 1.45.68.47.50)

SUBSCRIPTIONS.
Tel.: (33) (0) 1.45.68.45.65
1 year: 211 French francs. 2 years: 396 FF.
Students: 1 year: 132 French francs
Binder for one year's issues: 72 FF
Developing countries:
1 year: 132 French francs. 2 years: 211 FF.
Payment can be made with any convertible currency to the order of UNESCO or by Visa, Eurocard or Mastercard

Individual articles and photographs not copyrighted may be reprinted providing the credit line reads "Reprinted from the UNESCO Courier", plus date of issue, and three voucher copies are sent to the editor. Signed articles reprinted must bear author's name. Non-copyright photos will be supplied on request. Unsolicited manuscripts cannot be returned unless accompanied by an international reply coupon covering postage. Signed articles express the opinions of the authors and do not necessarily represent the opinions of UNESCO or those of the editors of the UNESCO Courier. Photo captions and headlines are written by the UNESCO Courier staff. The boundaries on maps published in the magazine do not imply official endorsement or acceptance by UNESCO or the United Nations. The UNESCO Courier is produced in microform (microfilm and/or microfiche) by: (1) UNESCO, 7 Place de Fontenoy, 75700 Paris; (2) University Microfilms (Xerox), Ann Arbor, Michigan 48100 U.S.A.; (3) N.C.R. Microcard Edition, Indian Head Inc., 111 West 40th Street, New York, U.S.A.; (4) Bell and Howell Co., Old Mansfield Road, Wooster, Ohio 44691, U.S.A.

IMPRIMÉ EN FRANCE (Printed in France)
DÉPOT LÉGAL: C1 - APRIL 1998
COMMISSION PARITAIRE N° 71844 - DIFFUSÉ PAR LES N.M.P.P.
Photocomposition, photogravure:
Le Courrier de l'UNESCO.
Impression: Maulde & Renou
ISSN 0041-5278 N° 4-1998-OPI-98-570 A

This issue comprises 52 pages and a 4-page insert between pages 2-3 and 50-51.

UNESCO on line via Internet

http://www.unesco.org

Currently on-line are: an index of the contents of the last 22 issues of the *UNESCO Courier*, UNESCO press releases, addresses, fax, telex and electronic mail numbers of UNESCO's regional offices, National Commissions and UNESCO Clubs, the directory of UNESCO databases and information services, colour images of the Japanese Garden and other architectural sites at UNESCO Headquarters, as well as works of art such as Henry Moore's reclining sculpture.

The world in your hands

World Heritage Review

From volcanoes, mountains and waterfalls to cities rich in history and monuments that eloquently speak of great cultures and civilizations, the quarterly **World Heritage Review** chronicles the history, beauty and singularity of sites on the World Heritage List. Learn about these destinations and keep informed of efforts under way to preserve our natural and cultural heritage. A superb gift for readers of all ages, professions and continents with an interest in preserving humanity's treasures.

SUBSCRIPTION FORM

World Heritage Review

YES, I wish to subscribe to the World Heritage Review

1 year (4 issues)
140 FF/£18/US$28 plus airmail charges:

- → ○ EU: 64FF/£8.15/US$13
- → ○ Other European countries: 72 FF/£9.15/US$14.65
- → ○ Other countries: 96FF/£12.20/US$19.65

Full name: _____

Address: _____

City and postcode: _____

Country: _____

Payment enclosed:

- → ○ Cheque
- → ○ Visa → ○ Eurocard → ○ MasterCard
- → ○ Diners → ○ American Express

Card No.: _____

Expiry date: _____

Subscription forms and payment (cheques payable to Jean De Lannoy) should be sent to UNESCO Publishing's subscription agent:

Jean de Lannoy, Service abonnements
Avenue du Roi, 202
B-1190 Brussels (Belgium)
Tel: (+32 2) 538 51 69/538 43 08; fax: (+32 2) 538 08 41.

PUB COU 04/98

THEME OF NEXT MONTH'S ISSUE:

TECHNOLOGICAL PROGRESS AND HUMAN RESPONSIBILITY

INTERVIEW

FRENCH MIME MARCEL MARCEAU

HERITAGE

THE MONASTERY OF HAGHPAT (ARMENIA)

ENVIRONMENT

RENEWABLE ENERGY